

APRIL, 1960



AMATEUR RADIO
AMATEUR RADIO
AMATEUR RADIO
AMATEUR RADIO



AEGIS

Australia's own dependable brand of
STEREO & HI-FIDELITY UNITS!

AEGIS 5/10 ULTRA LINEAR BASIC AMP.

AEGIS AMPLIFIER CONTROL UNIT

AEGIS PRE-AMPLIFIER Mark 1

AEGIS PRE-AMPLIFIER Mark 2

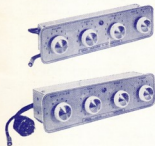
AEGIS FIDELITY TUNER Mark 2

AEGIS FIDELITY TUNER Mark 1

incorporating its OWN POWER SUPPLY

AEGIS STEREOPHONIC CONTROL UNIT

*for correct Stereophonic coupling of two
Aegis 5/10 Amplifiers. Ask for details.*



Also ask to see the new Stereo Six-88

This latest Stereo Amplifier by Aegis competes more than favourably with higher priced imported units. Performance ratings are most spectacular!

*Now available from Magraths of Melbourne
and Aegis Agents in other States.*

Manufactured in Australia for Australian conditions by . . .

AEGIS MANUFACTURING CO. PTY. LTD.

208 LT. LONSDALE ST., MELB., C.I., VICTORIA. PHONE FB 3731



AMATEUR RADIO

"HAM" RADIO SUPPLIERS

(KEN MILLBOURN, PROP.)

5A MELVILLE STREET, HAWTHORN, VICTORIA

North Balwyn Tram Passes Corner.

Phone: WM 6465

Money Orders and Postal Notes payable North Hawthorn P.O. Packing Charge on all goods over 10 lbs. in weight, 5/- extra

APN1 ALTIMETER UNITS

Contains unit suitable for t.v. wobulator complete with valves and generator. Few only. £7/10/0.

AMERICAN LORAN INDICATOR

Contains 34 valves, 3BP1 3 inch c.r.t., 6SN7, 6SL7, 6AG7, etc. Few only at £15/0/0

COMBINATION DRY BATTERY

1.4v. and 90v., 15 inches long, and 1 1/2 inches diameter. 10/-.

ATR2C TRANSCEIVERS

Portable. Complete with headphones, microphone, a.c. power supply. £50/0/0

ELECTROLYTIC CONDENSERS

Dubilier 8 uF, and 16 uF., 600v. 5/- each

SELSYN MOTORS

2 inch English Mk. I. 48 volt A.C. working. £2/10/0 pair.

RIGHT ANGLE PLUGS

American Ampenol, 2/6 each.

APN4 LORAN RECEIVERS

Complete with Valves. Contains: 5U4, VR105, 6H6, 6SA7, 6SL7, 6SN7, 6SJ7, four 6SK7, two 2X2, three 6B4. Ideal for wrecking. Packed in case. £7/10/0

VALVE SPECIALS!

20 for 20/-: 954.
12 for 20/-: EF50, 6H6, VT127
10 for 20/-: 7C7, EA50, 1P5, 955, 6AC7
8 for 20/-: 6SH7GT
7 for 20/-: 1C7
5 for 20/-: 6C4, 6K7G.
3 for 20/-: 956, 2X2, 12SF7.

BC966A I.F.F. Top Deck CHASSIS

With Valves: six 6SH7GTs, three 7193s, two 6H6s. Octal Sockets, Resistors, Condensers, 15 x 15 pF. Split-stator Condenser, Relays and Osc. Unit. 30/-.

RELAYS

522 Type 5,000 ohms £1
522 Type. Aerial Changeover £1

TYPE "S" POWER SUPPLY

230 Volt A.C. in good condition. £25/0/0

CATHODE RAY TUBES

7" 7BP7, 10/- 3" 3BP1, 45/-.

CARBON HAND MUKES

Type No. 3. New. 12/6.

LOG BOOKS

W.I.A. Log Books, 4/6.

CRYSTALS—£2 EACH

2081.2, 2096.25, 2103.1, 2112.5, 2336.4,
2410, 2442.5, 2935 Kc.
3030, 3050, 3055, 3184, 3320, 3432.5, 3450,
3460.5, 3467.5, 3515, 3540, 3620, 3650,
3735, 3840, 3885 Kc.
4035, 4042.5, 4080, 4096, 4130, 4255, 4280,
4285, 4395, 4398.7, 4451, 4520, 4700,
4750, 4760, 4765, 4780, 4870, 4875, 4885,
4930, 4955, 4965 Kc.
5000, 5095, 5166, 5180, 5245, 5280, 5385,
5410, 5435, 5437.5, 5480, 5513, 5530, 5535,
5655.55, 5701, 5706, 5725, 5740, 5744.44,
5750, 5770, 5773.33, 5775, 5840, 5850,
5855, 5875, 5897, 5980 Kc.
6000, 6021, 6100, 6106.667 6125, 6173,
6175, 6187, 6225, 6240, 6300, 6305, 6317,
6333.33, 6373.33, 6400, 6406, 6440, 6480,
6473, 6497, 6506, 6522, 6525, 6547.9,
6583, 6690, 6900, 6925 Kc.
7010, 7015, 7016, 7045, 7055, 7065, 7070,
7120, 7175, 7191, 7197.1, 7200, 7270, 7275,
7300, 7350, 7360, 7373.33, 7375, 7400,
7406, 7425, 7435, 7440, 7487, 7500, 7506,
7660, 7725, 7750, 7775, 7800, 7825, 7850,
7875, 7890, 7920, 7925, 7930 Kc.
8004, 8010, 8175, 8225, 8280, 8290, 8300,
8392, 8432, 8531, 8625, 8825, 8841 Kc.

CRYSTALS—30/- EACH

In FT243 Holders. Sockets 2/9 ea.

4295, 4340, 4360, 4375, 4815, 4840, 4852,
4955, 5205, 5295, 5327.5, 5360, 5397.2,
5660, 5760, 5782, 5815, 5852.5, 5910,
5920, 6040, 6210, 6235, 6243.33, 6375,
6470, 6640, 6700, 6910, 7120, 7270, 7350,
7450, 8195, 8353.85 Kc.

CRYSTALS—20/- EACH

In DC11 Holders. Sockets 2/6 ea.

5170, 5410, 5700, 5710, 5810, 5910, 6350,
6420, 6423.33, 6450, 6561, 6572, 6650,
6783.333, 6940, 6960, 7010, 7660, 8155,
8161.538, 8171, 8176.923, 8182, 8264.615,
8425.714, 8460, 8469.230, 8525, 8645.454,
8682.857 Kc.

3.5 Mc. Miniature Marker Crystals with socket £2/10/0

5.5 Mc. Marker Crystals with Socket £2/10/0

Crystals, 1898.75, 1985, 1986.25 Kc, 50/-

SWITCH BOXES

Press Button (6 position). Contains six Bezal Indicators. New. 5/-.

CO-AXIAL CABLE

100 ohm co-ax. cable, 3/8" diam., 2/- yd.
98 ohm co-ax. cable, 3/8" diam., in 100
yard rolls £7/10/0, or 1/9 yd.
50 ohm co-ax. cable, 1/2" diam. Cut to
any length. 2/- yd.

SET OF VALVES FOR COMMAND TRANSMITTER

Two 1625, one 1626, one 1629.
New in carton. 15/- a Set.

SET OF VALVES FOR COMMAND RECEIVER

Three 12SK7, one 12K8, one 12SR7,
one 12A6. New in carton. £10/0/0 a Set.

SCR522 TRANSCEIVERS

Freq. range: 100 to 150 Mc. Complete
with Valves, including 832s.
As they come—£10/0/0

RADAR TRANSCEIVERS RT45/TPX1

American, brand new. Freq. range:
150 Mc. to 190 Mc. Suitable for conversion
t.v. field strength meter. 30
Mc. i.f. strip, two r.f. stages. 16 Valves:
955, 956, 6SL7, 6SN7, 2C26, 2X2, 5U4,
6AC7, 6V6, 6H6. Blower motor, split-
stator condenser (15 x 15 pF.),
connectors, switches, plugs, condensers,
and resistors.
Bargain at £10/0/0

MORSE KEYS

Heavy duty P.M.G. Type. New. £1.

CAR RADIO SUPPRESSORS

Spark Plug Type 2/- each, Distributor
Type 2/- each, or 12 for £1.

MIN. VARIABLE CONDENSERS

Screwdriver adjustment, silver plated.
Sizes available: 25, 35, 80, and 105 pF.
7/6 each or Three for £1.

SPECIALS!! SPECIALS!!

Headphones, Brown's Type "F", low
impedance, new £3
Telephone Handsets (American), new £2/5/0
Phillips' Capacity Bridge, a.c. operated £15
Loctal Valve Sockets 1/- each
Four-gang Condensers, large, 150 pF.
per section £1
Small Type Phone Jacks 1/6 each
Roblan RMG2 two-gang variable Con-
densers, 10-24 pF £1
Two-gang Condensers, b.c. 12/6 ea.
Neon Indicator Globes, 230v. b.c. base
2/6 each
Midget Reinhartz Coils 7/6 each
Tuning Knobs, 3" diam. w/skirt, 1" bore
5/- each
Power Transformers, 265v. aside 60 mA.,
6.3v., 5v., 4.5v. 39/6
Power Transformers, Abac, 300v. aside
120 mA., 6.3v. 2a., 5v. 2a. £3

ACORN VALVE SOCKETS

Ceramic type, 3/6.

AMATEUR RADIO

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

Published by the Wireless Institute of Australia, Victorian Division,
478 Victoria Parade, East Melbourne, C.2.
Postal Address: P.O. Box 36, East Melbourne, C.2, Vic.

CO-EDITORS:

K. M. COCKING, VK3ZFQ.
R. W. HIGGINBOTHAM, VK3RN.

PUBLICATIONS COMMITTEE:

G. W. BATY, VK3AOM.
S. T. CLARK, VK3ASC.
J. C. DUNCAN, VK3VZ.
J. A. ELTON, VK3JD.
R. S. FISHER, VK3OM.
E. C. MANIFOLD, VK3EM.
J. G. MARSLAND, VK3NY.
A. ROUDIE, VK3UJ.
J. VAILE, VK3PZ.

ADVERTISING REPRESENTATIVE:

BEATRICE TOUZEAU,
96 Collins St., Melbourne, C.1.
Telephone: MF 4505.

PRINTERS:

"RICHMOND CHRONICLE,"
Shakespeare St., Richmond, E.1.
Telephone: JB 2419.

MSS. and Magazine Correspondence
should be forwarded to the Editor,
P.O. BOX 36,
EAST MELBOURNE, C.2, VIC.,
on or before the 8th of each month.

Subscription rate, in Australia and
Overseas, is 24/- per annum, in
advance (post paid).

Wireless Institute of Australia
(Victorian Division) Rooms' Phone
Number is JA 5535.

WI BROADCASTS

All Amateurs are urged to keep these
frequencies clear during, and for a period
of 15 minutes after, the official Broadcasts.

VK3WI: Sundays, 1100 hours EST, simultane-
ously on 3575 Kc., 7146 Kc., and 145.0
Mc. Intrastrate call-backs taken on 7030
Kc..

VK3WI: Sundays, 1630 hours EST, simultane-
ously on 3573 and 7146 Kc., 51.016 and
146.25 Mc. Intrastrate hook-ups taken on
7135 Kc. Individual frequency checks
of Amateur Stations given when VK3WI
is on the air.

VK4WI: Sundays, 0900 hours EST, simultane-
ously on 7146 Kc. and 14.342 Mc. Intra-
strate hook-ups taken on 7105 Kc.

VK3WI: Sundays, 0900 hours CAT, on 7146
Kc. Intrastrate hook-ups taken on 7125
Kc. Frequency checks given when VK-
3WI is on the air and also by VK3MD
by arrangement.

VK6WI: Sundays at 0930 hours WAST, on
7146 Kc. Intrastrate hook-ups taken on
7085 Kc.

VK7WI: Sundays at 1000 hours EST, on 7146
Kc. and 3672 Kc. Intrastrate hook-ups
taken on 7115 Kc.

EDITORIAL



No Annual Easter Convention

The Wireless Institute of Australia
will not hold its Federal Convention
this year! The reason being that the
Federal Council voted against it by
five votes to two on a motion sub-
mitted to it by the VK2 Division—the
largest Division in the Institute.

It's reason? Mainly Finance!

Now no one will deny that the
cost of running a Convention amounts
to quite a large sum of money by
the time air fares, accommodation
and meals, and administrative print-
ing costs have been met. But that
the decision not to hold a Convention
is a wise one is wide open to
speculation.

Let us first consider why our Con-
stitution provides for a Convention.
The primary reason is to enable the
Federal Council to meet together to
discuss and, if possible, reach agree-
ment on resolutions designed to
augment all matters pertaining to
the conduct of the Amateur Service
in the Commonwealth of Australia.

Any member of the Federal Coun-
cil, past or present, who has attend-
ed a Convention will agree, without
equivocation, that to attempt to
arrive at the same conclusions by
means of correspondence would not
only be a laborious procedure but
would ultimately get nowhere. It
would be like trying to solve the
intricate problems of a judicial court
case without anyone appearing in
court or without the jury meeting
to resolve the evidence placed be-
fore it.

The ex officio office of the Federal
Council is the Federal Executive,
but it must be ignored in regard to
Conventions because it can only
carry out the decisions of the Federal
Council and has no power to convene
a Convention under any other cir-
cumstances than by the approval of
the Federal Council.

The Federal Council consists of a
member representative from each
Division of our Institute who, inter-
al casts his vote on behalf of the
members of his Division. His Div-

ision's decision is, in turn, imple-
mented by the Divisional Council
after a majority vote of the voting
members of a Division has been
taken.

That the Federal Council voted
against holding an annual Conven-
tion is indicative that the majority
of members in five Divisions did not
desire that its Institute's Federal
Council meet to discuss and resolve
their problems. Is this indeed so?

If you, as a member, had no say
in this matter, then it is high time
you saw to it that your Divisional
Council carried out the constitutional
principles of the majority of mem-
bers in your Division. If you are
satisfied that your Council carried
out your wishes in voting against the
holding of a Convention to discuss
and resolve your problems, then
there is no argument. There should
only be a Convention when you, the
member, say there should be one,
and if you didn't want one then you
as a member are either disinterested
or satisfied. Which is it?

Due to no lack of effort your battle
has been fought in Geneva at the
recent International Telecommunica-
tions Conference. By reason of that
effort you have lost far less than
might have been the case. If Amate-
ur Radio is to continue to exist
in the world of communications, then
its representative bodies must con-
tinue to function on behalf of its
countries licensed transmitting Amate-
urs. As far as the W.I.A. is con-
cerned this can only be successful if
the Federal Council can function
under its constitution as it is meant
to do. You, as a member, must see
to it that your Division of the In-
stitute represents your wants in the
manner you want them represented.
Constitutionally, you have one course
—to represent your requirements to
the Federal Council through your
Divisional Council. If this won't
work, then you have no alternative
than to change your Constitutional
set-up.

FEDERAL EXECUTIVE.

THE CONTENTS

Synchronous Communication—Part One	2
Three-Band Crystal Controlled Converter	7
Some Considerations in the Selection of	
an Antenna Tower	8
A Voltage Tuned B.F.O.	11
Technical Correspondence: VT127 Data	11
Awards: Diploma 5 de Mayo	11
The Sad Story of a Multi-Op. Station in	
the National Field Day	12
Hints for 122 Transceiver Owners	13
Book Review	15

Two-Band Crystal Locked V.h.f. Con-	
verters	15
Prominent Amateur Passes Beyond the	
Veale	17
Hints and Kinks:	
Paral-Red Plate Modulation	18
How is Your Modulation	18
SWL	19
DX	21
VHF	22
Correspondence	23

SYNCHRONOUS COMMUNICATION

PART ONE

M. R. HASKARD,* VK5ZBH

SUMMARY

During the last few years there has been considerable interest in s.s.b., because of its advantages over a.m.

In this paper it is shown that a simpler system can be used, namely synchronous communication. It has the same advantages as s.s.b., but in certain cases a synchronous communication system is superior to a s.s.b. system. The paper is in three main sections:

- (i) Introduction. Generation and reception of a d.s.b.s.c. signal.
- (ii) Comparison between an a.m., s.s.b., and d.s.b.s.c. system.
- (iii) Practical hints on designing and constructing a d.s.b.s.c. system.

(i) INTRODUCTION

For many years now communication systems have been using a.m., but during the last few years there has been considerable interest in s.s.b. It is certainly true that s.s.b. has many advantages over a.m., but this does not mean that s.s.b. is the ideal system. In this article an endeavour is made to show that, in many ways, a d.s.b.s.c. system is as efficient as, and in some respects superior to, s.s.b.

Let us modulate a carrier $c(t) = c \sin \omega t$ with a signal $M(t)$ [where the highest frequency in $M(t)$ is at least less than half the carrier frequency] using, in turn, the three main types of amplitude modulation, namely a.m., s.s.b. and d.s.b.s.c. On studying the resultant waveforms and the frequency spectrums (Fig. 1) we find that:

- (1) The envelope of the a.m. and d.s.b.s.c. waves are identical with the modulating signal $M(t)$.
- (2) The frequency spectrum of the a.m. wave can be split up into three parts, namely
 - (a) a carrier,
 - (b) a lower sideband, and
 - (c) an upper sideband.

For the d.s.b.s.c. signal we have only the two sidebands, and with the s.s.b. signal just one sideband, either upper or lower. These are illustrated in Fig. 1.

If we look closer at d.s.b.s.c. and s.s.b. signals in which $M(t) = \sin pt$, viz., we now have sinusoidal modulation, we find that our d.s.b.s.c. signal consists of two frequencies $\omega \pm p$, where " ω " is the carrier frequency and " p " the modulating frequency. These two frequencies ($\omega \pm p$ cycles per second) beat together to give a resultant waveform as in Fig. 2. From this beat pattern it can be seen that every time the envelope passes through zero there is a 180° phase shift.

With the s.s.b. signal we have only one output frequency, either $\omega + p$ or $\omega - p$ cycles/sec. If now we modulate a s.s.b. transmitter with a two-tone signal $M(t) = \sin p_1 t + \sin p_2 t$ we obtain two output frequencies ($\omega + p_1$, $\omega + p_2$ or $\omega - p_1$ and $\omega - p_2$ cycles/sec.) and again these combine to give a beat pattern.

The examination of an a.m. system shows that the system fails badly for two main reasons. They are—

- (a) A carrier, which contains no information is transmitted;
- (b) Linear detection is normally employed, and this is an inefficient detector.

In a d.s.b.s.c. or s.s.b. system the carrier is not transmitted and consequently our transmitted power is reduced and our efficiency is increased. These systems employ more efficient types of detectors, namely, square law or synchronous types.

However, in receiving s.s.b. the main difficulty is to lock the receiver local oscillator and the incoming signal together in frequency. If drift occurs the information desired from the signal becomes "unreadable". With d.s.b.s.c., using a synchronous detector, the local oscillator and signal are phase locked and maximum undistorted output is obtained. By using this phase locking system we can make the receiver follow a signal no matter whether the signal is shifting in frequency, or the

receiver local oscillator is drifting, or both of these are occurring at the same time.

The Synchronous Communication System

In examining a system let us first determine how such a d.s.b.s.c. signal is generated.

(i) The Transmitter

As any balanced modulator will produce a d.s.b.s.c. signal, it is comparatively simple to make a transmitter. The simplest method is by using two tubes in the final amplifier and screen modulating them. To cancel the carrier we can have one of two configurations:

- (a) A push-pull grid circuit and a parallel plate output circuit, or
- (b) A parallel grid input and a push-pull output circuit.

These two circuits are shown in Figs. 3 and 4 respectively.

The d.c. potential, applied to the screen grids, is such that for no audio signal, the two tubes are just cut off. For small transmitters (peak powers

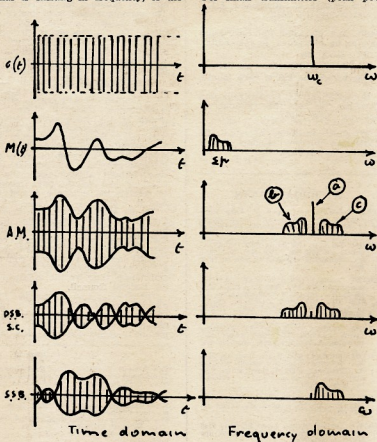


Fig. 1.

* 3 Te Anau Ave., Prospect, South Aus.

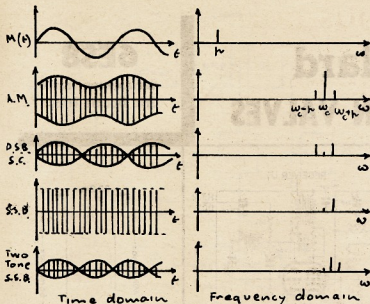


Fig. 2.

up to approximately 100 watts) zero bias is quite sufficient, but for larger powers, a negative bias may have to be supplied, to ensure that the tube is cut off, its ratings are not exceeded, and that a clean cross-over occurs when one tube takes over from the other.

If we now apply an audio signal, one tube will conduct while the other is cut off. Further, as in Class B operation, on the next half of the modulating signal's cycle, the valves change over operating conditions. If, however, for no audio signal both tubes are conducting slightly, then on applying modulation, distortion will occur until one valve is cut off completely. Thus

we have each valve alternatively conducting, their outputs being 180° out of phase. Because of this operation and the fact that for no modulation both tubes are cut off, we can obtain good carrier suppression. Again because one valve is on while the other is off, the circuit is self-neutralising, the cut-off valve's capacity being the neutralising condenser.

This balanced modulator can be made the final of a transmitter, as it can be a high power modulator. It is designed as a normal Class C final with a voltage E_s on the screen grids. The plate voltage must never swing below E_s or else distortion occurs. When we modulate the valves, the peak voltage we can apply to the screen grids is E_s , then all a modulator has to do is to supply a signal which has a peak voltage E_s . On large tetrodes it is usual to have the screen grids at a relatively low potential (E_s) when compared to the plate voltage and therefore our plate voltage swing, hence efficiency, will not be reduced by much. Our modulator has only to supply a small voltage swing and hence only a few watts of

power, compared with an a.m. transmitter modulator, which must deliver half as much audio power as there is r.f. power, for 100% modulation.

The efficiency of the screen grid modulated final can be shown simply to be $\pi/4$. This is compatible to an a.m. transmitter, for $\pi/4$ is the maximum efficiency of a Class B modulator and π is the efficiency of the Class C final.

If, instead of using this type of balanced modulator, we use a low level diode type or something similar, we would need high power linear amplifiers (as required for s.s.b.). These can be very tricky to operate.

The remainder of the transmitter is the same as any normal a.m. transmitter.

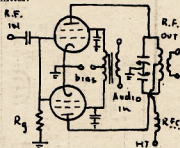


Fig. 4.

(2) The Receiver

A simple basic synchronous receiver is shown in Fig. 5. It can be considered as a superheterodyne receiver with a zero intermediate frequency, the low pass filter giving our required selectivity. The detector stage is either a product or square law detector. The latter however gives rise to additional noise and greater distortion (additional terms produced when squaring). For this reason a product detector is generally used. This simple receiver suffers from two faults. Firstly, heterodyne whistles occur. As we tune in a signal we may obtain bad heterodyne whistles, which can become very disturbing to an operator.

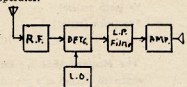


Fig. 5

Secondly, the phase relationship between our local oscillator and the input signal is very important. If both are in phase we obtain maximum output of signal, but when they are 90° out of phase then we have zero output. To overcome this we employ two such receivers, as in Fig. 6. The local oscillator feeds directly into the I detector and into the Q detector through a 90° phase shift network.

We see now that, if the input signal and local oscillator are in phase, then in the I channel we have maximum

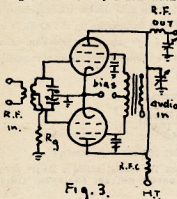


Fig. 3.

List of Symbols

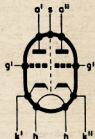
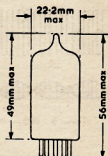
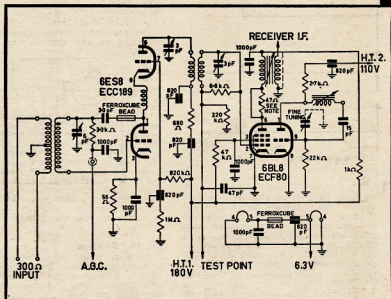
- a.g.c. = automatic gain control.
- a.m. = amplitude modulation.
- c(t) = carrier function.
- c.w. = continuous wave.
- d = the percentage increase in bandwidth.
- delta = small error in phase between the incoming signal and the local oscillator.
- d.s.b.s.c. = double sideband suppressed carrier.
- E_s = screen grid potential.
- f.m. = frequency modulation.
- L = local oscillator signal's peak amplitude.
- $M(t)$ = modulating function.
- n = class C efficiency.
- N = average noise power.
- p = modulating signals frequency.
- p.m. = phase modulation.
- P_{in} = radio frequency signal power into the detector stage.
- S/N = signal-to-noise ratio.
- S_s = carrier peak amplitude.
- s.s.b. = single sideband.
- (1/T) = the attenuation factor of the signal power during transmission.
- w = carrier frequency.

Mullard

TELEVISION VALVES

6ES8

Variable-mu Frame
Grid Double Triode



B9A Base

6ES8 CHARACTERISTICS

Heater Ratings

V_a (each section)

I_a (each section)

μ (each section)

V_g (each section)

$*V_g$ (each section)

6.3V at 365mA

90V

15mA

12.5mA/V

—1.2V

—9.0V

* For 100:1 reduction in cascode slope.

The Mullard 6ES8 is a variable μ frame grid double triode primarily intended for use as a cascode amplifier at frequencies up to 220 Mc/s in television receivers. This 6ES8 offers a new concept in television valve construction and leads to the design of television receiver tuners of increased gain and superior noise figure.



ISSUED BY THE TECHNICAL SERVICE DEPARTMENT

MULLARD-AUSTRALIA PTY. LTD., 35-43 CLARENCE ST., SYDNEY, BX2006 & 123-129 VICTORIA PDE., COLLINGWOOD, NS. VIC. 41 6644
ASSOCIATED WITH MULLARD LIMITED, LONDON, MULLARD EQUIPMENT LIMITED AND MULLARD OVERSEAS LIMITED

6906

MT95X

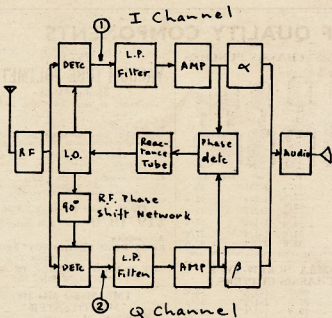


Fig. 6.

output and zero output in the Q channel, i.e. the receiver is correctly tuned. If there is a difference in phase ($=$ delta) between our local oscillator and signal, then the output on the I channel falls off at a rate equal to $\cos(\text{delta})$ while the signal in the Q channel increases at a $\sin(\text{delta})$ rate, namely the output from the I channel does not vary much, but the output from the Q channel increases rapidly. These two signals are amplified and compared in the phase detector and the output is fed to a reactance tube. The reactance tube changes the frequency of the local oscillator until the signal in the Q channel is reduced to zero, i.e. the local oscillator is locked in correctly in phase and frequency.

Let us now open the servo loop and examine the principle of the receiver more closely. If our input signal is simply a carrier whose frequency differs slightly from that of the local oscillator of the receiver, then from both I and Q channels we obtain a single audio tone whose frequency is the difference of the frequencies of the incoming carrier and local oscillator.

Because of the 90° radio frequency phase shift, these two audio signals at (1) and (2) in Fig. 6 are 90° out of phase. If then, these outputs are connected to the X and Y plates of an oscilloscope, the resultant pattern displayed is a circle as in Fig. 7. The direction of rotation of the circle changes if the incoming signal's frequency is changed from below the local oscillator frequency to the above.

Now let us receive a d.s.b.s.c. signal. If the receiver is tuned correctly in frequency, then the output from the I

$$I_i = SL \cos(\text{delta}), \cos pt$$

$$\text{and from the Q channel}$$

$$Q_i = SL \sin(\text{delta}), \cos pt$$

We have two signals whose amplitudes are dependent on delta, the phase difference between the input signal and the local oscillator. Should there be a change in frequency, viz. delta is changing linearly with time, then the I and Q channel signals are as in Fig. 8. The two envelopes are 90° out of phase and by displaying points (1) and (2) (Fig. 6) on the oscilloscope as before, the resultant pattern is as in Fig. 9. When delta is constant, the pattern simplifies to a straight line inclined to the vertical (or horizontal) axis at an angle delta. Consequently when the signal is correctly locked on, delta is zero and our pattern is a vertical (or horizontal) line. (Fig. 10).

It may be mentioned here that the alpha and beta networks added in Fig. 6 will be discussed later. They form a 90° phase shift network to suppress noise from one or the other sidebands.

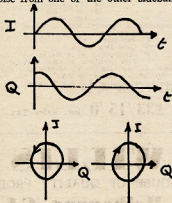


Fig. 7

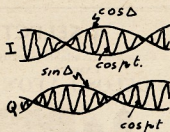


Fig. 8.

Not only is the synchronous receiver a more efficient means of detecting a signal, but it has several other advantages. Since the local oscillator and signals are at the same frequency, we have no image worries. In small transceivers working on one given frequency, we can employ the one oscillator for both transmitter and receiver, thus reducing the number of components, the size of the transceiver, and power drain. There can be an even greater saving in a narrow band f.m. system. The synchronous receiver can receive narrow band f.m., the I channel becoming the Q channel and the Q channel the I (because of the 90° phase shifts between the carrier and sidebands in a f.m. signal). The reactance tube, then, can not only be used in the servo-loop, but also used to modulate the local oscillator for the transmitter.

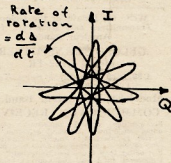


Fig. 9.

Having our selectivity determined by a low pass filter is an advantage. (The overall bandwidth of the receiver is the low pass filter response mirrored about the carrier frequency.) With modern filters we can obtain a high rate of increase of attenuation near the filter's

(Continued on Page 11)

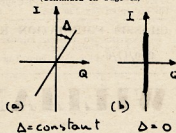


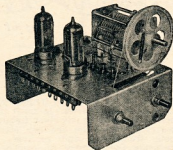
Fig. 10.

A SELECTION OF QUALITY COMPONENTS

Shipment Available Shortly

FAMOUS

GELOSO VFO'S



CAT. No. 4/102

Five-band Unit Exciter for 80, 40, 20, 15 and 10 metre bands.

£9/2/0 plus 12½% S.T.

CAT. No. 4/103

Unit Exciter for 144-148 Mc. operation with switch-to-crystal facility.

£10/15/0 plus 12½% S.T.

CAT. No. 4/104

Six-band Unit Exciter for 80, 40, 20, 15, 11 and 10 metre bands.

£9/15/0 plus 12½% S.T.

Write for Details of the Geloso Transmitters and Receivers for Amateur Bands

GELOSO TRANSMITTER Model G222-TR

£99/15/0 plus 12½% Sales Tax
Plus set of valves £11/8/8.

Model 209-R Amateur Band HF COMMUNICAT'N RECEIVER

Five-position crystal selectivity control, upper and lower sideband selection with carrier re-insertion, 5 meter calibrated to plus 40 db. signal-to-noise ratio at 1 microvolt better than 6 db. sensitivity better than 1 microvolt for 1 watt audio output, balanced or unbalanced antenna input.

£163/1/10 inc. Sales Tax
FREIGHT EXTRA ON ALL ORDERS.

PI-COUPLER CHOKES

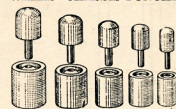
WILLIS Pi-Coupler Choke wound on ceramic former. Easily handle 150 watt final. Dimensions: 6" high on 1" diam. former. Rated for 250 mA.

..... 25/6
GELOSO pi-wound Pi-Coupler Choke, rated for 125 mA. 9/6

CHASSIS FOUNDATION KIT to house GELOSO Receiver Front-End and Power Supply.

£10/17/6 plus 25% Sales Tax

"WILLIS" CHASSIS PUNCHES



3/8"	21/-	1-3/16"	35/-
1/2"	22/6	1-1/4"	42/6
5/8"	22/6	1-3/8"	47/6
11/16"	23/6	1-1/2"	47/6
3/4"	24/6	1-3/4"	57/6
1"	31/6	2"	62/6
1-1/8"	33/6		

Any special size requirements made to order

Q-MAX SCREW-TYPE CHASSIS CUTTERS

5/8"	26/7	1-3/8"	38/6
3/4"	26/7	1-1/2"	38/6
7/8"	29/4	1-3/4"	42/-
1"	34/10	2-3/32"	68/9
1-1/8"	34/10	2-1/2"	81/7
1-1/4"	34/10	1" Square	52/8

One key supplied with each cutter.
Spare keys 1/8 each.

PI-COUPLES FOR AMATEUR TRANSMITTERS

WILLIS 150 watt Pi-Coupler wound on ceramic former for compact design

..... £3/19/6
WILLIS Hi-Power air-wound Pi-Coupler. Similar design to well known American unit

..... £4/17/6
GELOSO 35 watt Pi-Coupler wound on ceramic former

..... £1/11/6
Willis Pi-Couplers are made to rigid specifications with special in-built switch to provide for shunting capacity to ground if required.

GRUNDIG GRID DIP METER

TYPE 701

Frequency Ranges:-	1.7 - 3.7 Mc.
2: 3.7 - 8 "	
3: 8 - 17 "	
4: 17 - 40 "	
5: 40 - 100 "	
6: 100 - 250 "	

Frequency Accuracy: Plus or minus 1.5%.

Modes of Operation:

- "R" Receiver.
- "G" Grid Dip Meter.
- "W" Absorption Wave Meter.
- "S" Test Oscillator 50 c.p.s. modulated.

Power Supply: 110/220 V., 40-60 c.p.s.

Consumption: approx. 10 VA.

Dimensions: approx. 8 x 3 x 2 inches.

Weight: approx. 1½ lbs.

Valve: EC92.

£33/15/0 inc. Sales Tax

TECH

VACUUM TUBE VOLTMETER

Model PV-58

Designed to read DC, AC, Zero-Centre, RF and HV.
AC-DC Voltage ranges: 0-1.5, 5, 15, 50, 150, 500 and 1,500 volts.

Type HV-20 High Voltage Probe with in-built multipliers extends DC scale by a factor of 20, giving full scale readings of 0-30, 100, 300, 1,000, 3,000, 10,000 and 30,000 volts. Decibel scale available for level observations based on 1mW into a 600 ohm load as zero db, corresponding to 0.774 volts AC on the 1.5 volt range. An AC volts/db. conversion chart supplied with each instrument as part of instruction booklet.

TECH Model PV-58 V.T.V.M.

£19/10/0 plus 12½% Sales Tax

Accessories:

RF-22 HIGH FREQUENCY PROBE
46/6 plus 12½% Sales Tax

HV-20 HIGH VOLTAGE PROBE
63/- plus 12½% Sales Tax

TMK Model MG-310

MULTITESTER

Sensitivity 20,000 ohm/V. DC

10,000 ohm/V. AC

Ranges:

0-5, 25, 100, 500, 1,000 volts AC.
0-5, 25, 100, 500, 1,000, 5,000 volts AC.
DC Current: 0-1 microamp.; 0-5, 50, 500 mA.
Resistance: 0-60K, 600K, 0-6Mg., 60Mg. ohms.
Decibels: Minus 20 to plus 16 db., plus 30 db.
£8/5/0 plus 12½% Sales Tax

TECH POCKET VOLT-OHM METER, Model PT-34

Sensitivity 1,000 ohm/V. using 300 microamp. meter.

Ranges:

0-10, 50, 250, 500 and 1,200 volts AC/DC.
0-1 mA., 100 mA. and 500 mA.
0-100K and infinity ohms.

44/- plus 12½% Sales Tax

Another Shipment Available

Soon of GELOSO

RECEIVER FRONT-END

FOR AMATEUR BANDS

This is the front-end of the Geloso G209-R Communications Receiver. Supplied complete with dial and matching tuning condenser, trimmer condensers and first i.f. transformer at 4.5 Mc., permitting immediate use as a converter feeding any receiver capable of tuning to 4.6 Mc.

FREQUENCY RANGES:

10-Metre Band (28.0 - 30.0 Mc.)	
11- " (29.0 - 30.0 ")	
15- " (21.0 - 21.5 ")	
20- " (14.0 - 14.4 ")	
40- " (7.0 - 7.3 ")	
80- " (3.5 - 4.0 ")	

Dial drive with 46:1 step-down ratio. Complete circuit diagram of G209-R Receiver supplied with each unit.

£24/10/- plus 25% Sales Tax

Valves not supplied: 6BA6 r.f. stage, 12AU6 oscillator-buffer, 6BE8 mixer.

WILLIAM WILLIS & CO. PTY. LTD.

THE HOUSE OF QUALITY PRODUCTS

428 Bourke Street, Melbourne, C.I., Vic.

MU 2426

Three-Band Crystal Controlled Converter

An Easy Way of Extending the High Frequency Coverage of Most Disposals Receivers

R. S. GURR,* VK9RO

A NUMBER of readily available disposals receivers have a top frequency limit of approximately 18 Mc. or so, and so the thought often comes to the mind of the owner to modify one of the ranges to cover at least the missing 21 Mc. and 28 Mc. bands. This method has proved satisfactory for some, but others have little success and often finish up ruining a perfectly good receiver and lowering its re-sale value.

Once converted, the job of recalibration of a professionally finished dial is also a difficult venture.

The converter described has enabled the writer to obtain four features not ordinarily available in a receiver tuning to even 30 Mc:—

- (1) Better front-end design on 28 and 21 Mc. bands.
- (2) Improved bandwidth.
- (3) Improved stability due to use of lower frequency range oscillator in the main receiver.
- (4) No modifications needed to main receiver.

oscillator frequency is arbitrary and an infinite number of oscillator/intermediate-frequency combinations are available to suit, depending mainly on the receiver range and crystals on hand. The choice of 18 Mc. was due to a 9 Mc. crystal being on hand. The 8 Mc. crystal from a Command doubles to 16 Mc. to make a good start for those possessing one.

The use of 18 Mc. allows the following i.f. ranges on the respective bands:

- (1) 14.000 — 14.350 Mc.
I.f.: 4.0 — 3.65 Mc.
(2) 21.000 — 21.450 Mc.
I.f.: 3.0 — 3.45 Mc.
(3) 28.000 — 30.000 Mc.
I.f.: 10.0 — 12.0 Mc.

Thus using any receiver tuning 3-12 Mc. one is able to tune the five bands. The idea has been worked well ahead of each of the following: AR7, BC342, BC312, R107, AR8, Eddystone 680X, H.R.O., dual wave receivers, etc. In the case of the 680X, it performs well also as a two-stage preamplifier on the top range 12-30 Mc.

tried. These three tubes in combination may be tested simply by using it as a two-stage premplifier for a receiver tuning the 13 to 30 Mc. range.

The oscillator plate circuit tuning is variable from approximately 15 to 30 Mc., so that should other crystals be used, the correct multiple can be tuned simply by rotating the 100 pF. condenser at the side. The tuning of the plate does not stop the crystal oscillation as in this modified Pierce circuit; the crystal oscillates immediately screen volts are applied. The correct tuning can be found by listening in a second receiver or by grid dip oscillator. The mixer and oscillator coils are mounted on the same base, each with its own shield, and this is the only coupling necessary. In the earlier model, the oscillator coil was separated from the mixer and coupling was via a 5 pF. condenser from the plate to mixer grid. In this set-up the

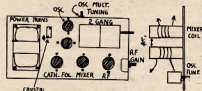


Fig. 2.—Layout of chassis.

mixer tuning was broad and greater mixer selectivity was gained by the inductive coupling now used.

A great deal of experimenting can go into the input coupling circuits of any r.f. stage and even now it is variable, depending on the antenna in use. Some aeriads do not load the stage enough to stop the r.f. taking off, but as the three-turn aerial primary can slide up and down, the stage can be readily loaded if desired.

The variable input coupling is handy to reduce cross-modulation effects in thickly populated Ham areas as the little reduction of r.f. gain can usually be made up in the following receiver.

No detailed construction is given as every Ham has his own way of laying things out, but the article is presented for any who may wish to use the same principles for extending their receiver ranges without attacking the receiver.

A further converter using a 6450 Kc. crystal and a r.f. and mixer range of 5-15 Mc. produces an intermediate frequency of 550 to 700 Kc. on 7 Mc. and 1100 to 1450 Kc. on 14 Mc. (when second harmonic of crystal used). The thought of a two-to-one frequency coverage on the 13 to 30 Mc. range has never worried the writer, who has never yet worked from a location where the signal-to-noise ratio was not already determined by electrical and atmospheric conditions at the receiver. The three-to-one coverage of the lower frequency converter is also of no consequence for the same reason but include static as the main noise factor.

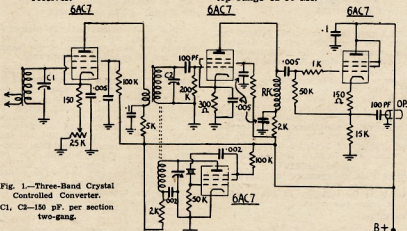


Fig. 1.—Three-Band Crystal Controlled Converter.

C1, C2—150 pF. per section
two-gang.

The unit has been loaned from shack to shack in both VK5 and VK9, and the idea has been received with pleasure by all who have used it. Its cost is very small, employing 6AC7s throughout and "junk-box" components, but mounted as it is, on a stripped Command receiver chassis with new front panel and chassis top, it fits in very neatly into even the "flash" Ham shacks.

The idea of crystal converters has been popular for years among v.h.f. equipment, but although high frequency converters have been of interest for ten years or more now, I have not observed many in my travels. On high frequency one major advantage is the ability to copy 14 Mc. single sideband with the stability of a 2 or 3 Mc. single sideband signal.

The crystal controlled oscillator produces a signal of 18 Mc. in my converter, but the choice of the actual

CONSTRUCTION

The unit is set out on the chassis as shown in Fig. 2.

The construction is simple. 6AC7s have been used throughout, wired in series parallel for a 12 volt filament system as the converter power supply also feeds a 3-6 Mc. Command receiver which is used as an intermediate frequency for transmitter monitoring.

The r.f. and mixer are tuned by a two-gang condenser and the coils tracked to give a 13 to 30 Mc. tuning range. There are trimmers fitted to the gang and slugs in the coils. Coils are shielded by a plate which cuts across the middle of the r.f. tube socket and the circuitry values are taken from A.R.R.L. for the r.f. and mixer components.

The cathode follower circuit was first sighted in an article by VK5AX on preamplifiers in "Amateur Radio." It works as well as any others I have

Some Considerations in the Selection of an Antenna Tower

EDWARD A. STANLEY, W4QDZ

● This article doesn't tell you how to design a tower, but it does discuss some of the things you should look for if you're in the market for a support for your beam.

of loads, but it is the opinion of the author that a little knowledge will be more helpful than dangerous and will materially assist the prospective ham-tower user in his selection of a proper structure.

DETERMINATION OF STRUCTURAL CAPACITY

Since our main concern is to know whether or not a given tower will stay up with the beam and rotator we place on it, we should consider the forces which act upon the tower. They are:

Wind pressure.
Static weight.
Torsion.

Of course there are other factors, but from the standpoint of the Amateur user, these will be the most important to consider. Most Amateurs do not even begin to realize the tremendous forces which build up within a tower structure when winds begin to work on it. We may well take the time to consider some of these effects in order to approach a basic understanding of the essential ingredients of a workable tower structure. Let us first take up the problem of pressure as applied by a wind. The formula for pressure is:

$$P = 0.0032V^2$$

where P is the pressure in pounds per square foot,
and V is the velocity of the wind in miles per hour.

Therefore,

$$V = \sqrt{P \div 0.0032}$$

Example: Given a tower rated as a "50-pound" tower. Determine the velocity of wind for which this tower is rated.

$$V = \sqrt{50 \div 0.0032} \\ = 125 \text{ miles per hour.}$$

One important thing to remember is that we are working against squared velocities and therefore a wind of 100 miles per hour will exert four times as much pressure as a wind of 50 miles per hour.

A few simple computations will illustrate the order of the strain which a tower must withstand under high wind velocities. The formula for obtaining the surface areas when calculating the pressure per square foot exposed to the wind is as follows for tubular members:

$$A = 0.666LD \div 144$$

where A is the area in square feet,
L is the length of the member in inches,

D is the width of the member in inches (in this case the outside diameter of the tubing).

The correction factor of 0.666 is applied to tubular surfaces. Where flat surfaces are involved, this factor should not be applied.

Example: Given a beam with the following dimensions:

Boom—2 inches o.d., 16 feet long.

Element No. 1—1 inch o.d., 33 feet long.

Element No. 2—1 inch o.d., 32 feet long.

Element No. 3—1 inch o.d., 31 feet long.

Determine the maximum surface area which will be exposed to the wind.

Since $A = 0.666LD \div 144$

then A (El. 1) = 1.831 square feet

A (El. 2) = 1.776 square feet

A (El. 3) = 1.720 square feet

for a total of 5.33 square feet.

Since it is obvious that the elements of the array will present the greater face to the wind, the area of the boom need not be calculated in this case.

Now, let us see how much windload would be developed by this array if it were mounted atop a tower, say, 40 feet in height, and placed in a wind of 100 miles per hour velocity. Using $P = 0.0032V^2$, we find that the pressure in pounds per square foot at this velocity is 32. Multiplying this by the area, 5.33, we find that the total pressure will be 170.56 pounds. To go further, multiply this figure by 40 (the height of the tower), and we find that there is transmitted, due to wind pressure on the antenna alone, a force of over 6,800 foot pounds which will result in that much compression on one leg of the tower, or that much tension on the other two legs, assuming it is a triangular structure. Already, it does not take long for a Ham with a curious disposition to begin to envision the terrific forces which begin to develop in his tower when the winds start gusting at it and its associated equipment.

COMPUTATIONS FOR A HYPOTHETICAL TOWER

Suppose, just for the purposes of practice, we set up a hypothetical tower and try to get a rough idea of what happens to it when subjected to the above beam, a rotator, mast and wind. We will select a wind velocity of 85 miles per hour, since this is a figure often used in the description of a tower. Let us use material with a rather heavy gauge wall in this hypothetical tower, retaining an outside diameter of 1 1/2 inches for the legs and braces, and keeping the wall thickness at 10 gauge rather than 16 or 14. Our tower would be specified like this:

IN recent years, the trend away from long wire antennae and toward the rotating type of directional radiator has been phenomenal. So also has been the general migration of dwellers from the noise and turmoil of the cities to the peace and quiet of newly developed suburban areas. Many of these areas have been planned from the moment of their conception for the ultimate in "gracious" living. To assure that the level of standards set initially will be maintained, duly appointed and legally equipped planning and zoning boards have been established with power to decide, among other things, what sizes and types of structures will be permitted, from the consideration of not only safety but appearance as well. As a result, it is becoming more the rule than the exception that a permit must be secured before the Amateur may install a tower to support his beam.

Working hand and glove with the planning and licensing committees are engineering consultants, and quite often the Ham who wants to erect a tower will be called upon to furnish engineering data in addition to sketches or pictures of the proposed installation.

Many factors bear strongly on the selection of the right tower to do the job at hand. Towers may be resolved into three general classifications:

Self-supporting towers (free-standing).

Guyed towers.

Mechanically actuated towers, guyed and self-supporting.

STRUCTURAL CONSIDERATIONS

Primarily, the tower must be able to support the static weight of its own structure, and that of the antenna mast and rotator. Also, it must support incidental ice, sleet and snow which may form radially about its members. In addition to the foregoing, it must be sufficiently strong to support all of the static weight plus the pressures placed upon its surface areas by winds which will be encountered, all taking into consideration the height at which the Ham desires to place his beam. Thus, we see, the prospective ham-tower erector has a multitude of things to consider before he makes a sizable investment in this new piece of highly important equipment for his station. He will begin to run into new terms such as "windload," "L/r," "maximum compression," and "moment." He will peruse specifications which will describe towers in terms of "so many pounds" or "so many miles per hour." This is bound to be confusing to him, and it is well to go into some of these things in order to assist him in evaluating the actual tower he will need. It is far from the intention of this article to go into complex analysis and integration

Reprinted from "QST," December, 1959.

Legs—To be of $1\frac{1}{2}$ inch o.d. steel tube, with 10 ga. (0.134 inch) wall.

Braces—Same as legs.

Windload—23.12 pounds per square foot (85 m.p.h.).

Structure—Triangular, 40 feet tall, 12 inch spacing between legs, braces located on 12 inch centres, totalling 40 in all. Tower to be free standing and topped with beam, rotator and mast with a total of 6 square feet of exposed area and a static weight of 100 pounds. Static weight of the tower is 400 pounds.

To compute: The area of the tower exposed to the wind.

Using the basis formula for determining the surface area of tubular members, we compute the area of one face, 2 legs $\times 41$ inches o.d. $\times 480$ inches height = 1,200 square inches.

40 braces $\times 1\frac{1}{2}$ inches o.d. $\times 12$ inches length = 600 square inches, for a total of 1,800 square inches, or 12.5 square feet. Apply the correction factor for tubular members, $12.5 \times 0.666 = 8.33$ square feet.

$$8 \text{ sq ft} \times 23.12 \text{ lbs./ft.}^2 \times 40 \text{ ft.} =$$

$$7.2 \text{ lbs./ft.} \times 10 \text{ ft.} \times 35 \text{ ft.} =$$

$$7.2 \text{ lbs./ft.} \times 10 \text{ ft.} \times 25 \text{ ft.} =$$

$$7.2 \text{ lbs./ft.} \times 10 \text{ ft.} \times 15 \text{ ft.} =$$

$$7.2 \text{ lbs./ft.} \times 10 \text{ ft.} \times 5 \text{ ft.} =$$

$$\text{STATIC WL. OF BEAM, ROTOR \& MAST}$$

$$\text{STATIC WL. OF TOWER}$$

$$\text{TOTAL WIND FORCE \& STATIC LOAD}$$

led A, B, C and D from the top to the ground. Keeping in mind that we are computing force at a wind velocity of 85 miles per hour blowing against the exposed faces of the tower and the beam, mast and rotator, let us total up the number of foot-pounds which are being transmitted down to the base of the tower:

At the top of the tower:

$$6 \text{ sq. ft.} \times 23.12 \text{ lbs.} \times 40 \text{ ft.} = 5548 \text{ ft. lbs.}$$

At the mid-point of Section A:

$$7.2 \text{ lbs.} \times 10 \text{ ft.} \times 35 \text{ ft.} = 2520 \text{ ft. lbs.}$$

At the mid-point of Section B:

$$7.2 \text{ lbs.} \times 10 \text{ ft.} \times 25 \text{ ft.} = 1800 \text{ ft. lbs.}$$

At the mid-point of Section C:

$$7.2 \text{ lbs.} \times 10 \text{ ft.} \times 15 \text{ ft.} = 1080 \text{ ft. lbs.}$$

At the mid-point of Section D:

$$7.2 \text{ lbs.} \times 10 \text{ ft.} \times 5 \text{ ft.} = 360 \text{ ft. lbs.}$$

Static weight of beam and tower

$$= 500 \text{ ft. lbs.}$$

Total transmitted force

$$= 11,808 \text{ ft. lbs.}$$

This means that there is a force of roughly 12,000 ft. lbs. or six tons being

engineering we have overloaded our tower 50 per cent.

It will be noticed that the support of the steel provided by the braces has not been considered in this computation. We have made our computations on the basis of the worst situation in this regard. Standard TR116 has been adopted in the public interest and is designed to eliminate misunderstandings between the manufacturer and the purchaser, and to assist the purchaser in selecting and obtaining without delay the proper product for his needs. This standard sets forth the basic requirements for radio transmitting towers and tower for radio transmitting antennae. Copies may be obtained from E.I.A., 777 14th St. N.W., Washington 5, D.C., for 25 cents each. Incidentally, the above referenced standard makes no note of any material other than steel.

TORSIONAL STABILITY

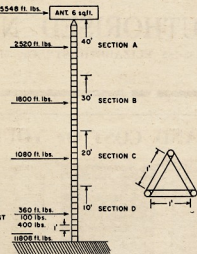
One thing which should always be considered in any tower topped with a rotating-beam antenna is the torsional stability, or ability to resist twisting. A directional array, during its rotation, builds up a considerable amount of kinetic energy. When rotation is stopped suddenly this energy is transmitted directly to the tower and tends to twist the section. It has been observed that the starting and stopping of a rotary beam quite often places more torsion on a tower than it might receive during a 100 miles per hour wind. To withstand this frequent impact of forces, it is necessary that diagonal bracing be employed. The proper tower for a large beam equipped with a positively locking rotor brake must be well designed in order to take these forces.

SPECIAL TYPES

From the standpoint of appearance, a self-supporting unit with a small base area is usually considered best. Un-sightly bulk is avoided and also the need for guy wires and a large base area. A special type of self-supporting tower is the type that can be cranked up and down and tilted over. Towers of this type have many advantages. They are easy to erect. The antenna can be mounted from the ground, eliminating the dangers involved in climbing. They can be easily lowered during exceptionally strong winds or when heavy icing occurs which might damage the antenna. However, the installation of these towers does require some special consideration. Positive locking devices are essential. There must be provision to prevent the tower from telescoping should a cable fail, and also to remove the weight of the telescoping sections from the cable when the tower is extended. Winches should have removable handles so that the tower may be left unattended with no danger to children or unthinking adults who may be tempted to tamper with the mechanism.

There has been considerable discussion about the feasibility of using a ground post for mounting tilt-over towers. The author has had considerable experience with one such mounting. This post is mounted in Florida sand and supports a 40-foot tower topped with a full-sized tri-band beam.

(Continued on Page 18)



transmitted to the base of the tower. It means that one leg may be put under a compression of 12,000 lbs., while the other two legs are under a tension of 6,000 lbs. each.

According to the official yardstick of the tower industry, E.I.A. Standard TR116, this is much in excess of the proper permissible compression considering the amount of steel available to do the job. The $1\frac{1}{2}$ inch o.d. tubing with the 10 gauge wall which we used has a cross-sectional area of steel of approximately 0.470 square inch. It is upon this cross-sectional area that we place a lot of our dependence when designing a steel tower. According to the standard, one square inch of steel of a certain grade and under certain conditions, will be permitted a maximum compression load of 17,000 lbs. Using this as a figure, our 0.470 square inch will only handle approximately 8,000 pounds of allowable compression. This means that according to good

Fig. 1.
Sketch showing loading on a 40 ft. triangular tower at a wind velocity of 85 m.p.h.

Since the tower is triangular, we apply a corrector of 1.5 to the above figure, making the total again 12.5 square feet. The area of the exposed face of the tower is 12.5 square feet and the pressure per square foot is 23.12 pounds at a velocity of 85 miles per hour. If we take the product of the two (12.5×23.12) and divide by the length of the tower in feet, we find that the tower has a windload of 7.2 pounds per lineal foot.

We now have the necessary figures to determine roughly what happens to our tower at the stated wind velocity. Refer to Fig. 1, which shows the general layout of the structure. To keep things simple, we will take a little license in our computations and make them on the basis of ten-foot increments, applying the wind force against the centre of each increment. The block at the top of the tower represents the combined areas of antenna, rotator and mast. The tower sections are label-

WINNERS FOR 1960!

A.R.R.L. Handbook, 1960 Edition

Published by American Radio Relay League.

The standard Manual of Amateur Radio Communication.

PRICE: 46/3 plus 2/6 postage.

All About Cubical Quad Antennas

BY ORR

A Handbook of Practical "Build-It-Yourself" information for the famous "Quad" Antennae.

PRICE: 34/3 plus 1/3 postage.

Here is a "double" no Ham enthusiast can afford to miss.

Obtainable now from—

McGILL'S AUTHORISED NEWSAGENCY

Est. 1860

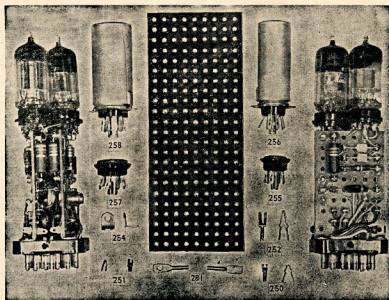
183-185 ELIZABETH STREET, MELBOURNE, C.1, VICTORIA

"The Post Office is opposite"

Phones: MY 1475-6-7

REDUCE THE SIZE AND COST OF YOUR NEW EQUIPMENT

TYPICAL
UNITS
USING
ZEPHYR
MATRIX
SYSTEM



Leaflets and
Price List available
from all
leading Wholesalers.



Enquiries invited
from
Manufacturers.

ZEPHYR PRODUCTS PTY. LTD.

58 HIGH STREET, GLEN IRIS, S.E.6, VIC.
Phones: BL 1300, BL 4556

A VOLTAGE TUNED B.F.O.

ALAN ELLIOTT,* VK3AEL

Synchronous Communication

(Continued from Page 5)

Some time ago it became necessary to install a beat frequency oscillator in a receiver in such a position on the chassis that it was not readily possible to bring out a control shaft for the variable condenser to the front panel. The easy way out was taken—that of leaving the b.f.o. frequency fixed and altering the c.w. beat note by tuning the receiver, but the lack of a pitch control was felt to be a disadvantage and, in addition, the performance on sideband was unsatisfactory.

Recently, however, a device has become available which appeared to be a solution to the problem—the voltage variable capacitor. The type available locally, called the Semicap 6.8SC20, made by the International Rectifier Corporation in California, is a silicon diode which undergoes a change of capacitance when a changing voltage is applied across it. The control or bias voltage is d.c. and may be located at a distance from the capacitor.

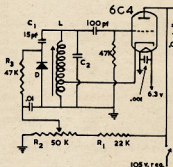


Fig. 1.—Voltage Tuned B.F.O.

D—Semicap Type 6.8SC20.
C2—Padder condenser in coil can.
L—B.f.o. coil.

The data sheets state that the Semicap has a capacitance range of 3 to 30 pF, a frequency range of 1 to 100 megacycles, and a maximum bias plus peak signal voltage rating of 200 volts. According to the graph supplied, the capacity of a typical specimen is approximately 30 pF. at 0.2 volts, 15 pF. at 1.0 volt, 7 pF. at 10 volts, and 3 pF. at 100 volts. The Q is given at over 1,000 megohms or more. In addition, the Semicap is stated to be virtually insensitive to changes in temperature.

Except that the intermediate frequency of the receiver was 455 Kc., whereas the lowest frequency rating of the Semicap was 1 megacycle, all this looked so hopeful that one was purchased for trial.

On connecting up the circuit recommended in the data sheet, wherein the bias voltage was applied to the diode via an r.f. choke, trouble in the form of spurious oscillations was immediately apparent. When the choke was replaced with a resistor, the circuit became stable and the capacity of the device began to be realised. As there is a current flow through this series resistor, the voltage drop reduces the

potential applied to the diode, thus setting a limit to the value of the resistor.

Experimenting with the values of the components led to the circuit of Fig. 1. The range of adjustment of the beat note depends on several factors including the values of R1, R2, R3, C1 and C2. By increasing R1 or R3, or by decreasing C1, the range of control is reduced. A logarithmic potentiometer was used for R2. The components R3 and C4 should be located close to the Semicap and the bias voltage should be stabilised. In my case, the existing regulated supply for the local oscillator was used.

The b.f.o. has proved to be stable and smooth in operation.

The ability to control the capacitance of a circuit by a potentiometer, located some distance away, opens up new possibilities in equipment design.

Technical Correspondence

VT127 DATA

Editor "A.R." Dear Sir,

I was very interested in the article which appeared in the January issue under the heading of "Technical Topics"—Valves.

The writer mentions the VT127 and regrets that no data is available, presumably for AB1 or AB2 operation. I cannot help out in this matter, but, quoting from "Babani", the VT127 is equivalent to the Mazda PEN46 (if that tells you anything) and the CV1127.

Further details: pentode; indirectly heated cathode; fil. volts, 4.0 at 1.75 amp.; designed as a time base power amplifier.

Maximum ratings: E. 315V, E₂ 210V, E₃ —6.9V, I. 63 mA, I₂ 14 mA, R. 90 ohms (cath. resistor), gm 8,500 μ mho. No output power quoted.

Base: 1, h; 2, k; 3, blank; 4, g; 5, g; 6 and 7, blank; 8, h; top cap. a.

—D. J. REITZE, VK6ZCD.

AWARDS

DIPLOMA 5 DE MAYO

On the 5th May, 1962, in the City of Puebla, Republic of Mexico, Mexican and French troops fought heroically for the possession of that City. This Saga has been known to posterity as the Battle of the 5th of May.

The Radio Club of Puebla, affiliated to the L.M.R.E.A.C., wishing to honor memory of the valiant soldiers who, with their bravery, added glorious pages to the history of Mexico, has decided to establish the Diploma Cinco De Mayo—5th of May—it being an honor to offer it to any duly authorized Amateur Radio Station that can fulfill the following conditions:

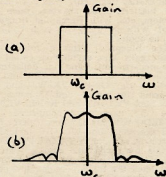
1. Amateurs in Mexico: Contacts with four Amateur Stations in the City of Puebla on two different bands.
2. Amateurs in the American Continent, excepting Mexico: Contacts with two Amateur Stations in the City of Puebla on two different bands.

3. Amateurs in Europe, Africa, Asia and Oceania: Contacts with two Amateur Stations in the City of Puebla on any band.

Only the contacts made after the 1st of January, 1959, are valid. They may be on c.w., phone or any combination.
All QSLs or written proof of two-way contacts with Amateurs in Puebla, Pue., Mexico, must be submitted by the applicant together with one dollar to cover return of QSLs and a certified Airmail Postage of the Diploma to the following address:
L.M.R.E.A.C., Club de Puebla, 2 Poniente 511, Puebla, Pue., Mexico.

cut off frequency, giving us an almost ideal selectivity curve (see Fig. 11). Besides this, by simple filter switching or using an active filter, the selectivity curve of the receiver can easily and quickly be changed.

A product detector is used, allowing very low input signals to be detected. This means that the bulk of the gain of the receiver can be at audio frequencies. This is an ideal set-up for a transistor receiver, as the number of expensive transistors will be small. Even the reactance tube can be replaced by a variable capacity diode.



(a) Ideal frequency response curve
(b) Practical response curve

Fig. 11.

It was mentioned earlier that the synchronous receiver can track signals which are shifting in frequency. The amount of shift a receiver will follow depends upon the bandwidth of the phase loop. The greater its bandwidth, the greater the shift in frequency it can follow.

However, if we make the phase loop bandwidth too wide, then noise will interfere with the tracking. Hence there is a limit to how wide our phase loop bandwidth can be. For a communication receiver then, a narrow bandwidth is required for two reasons. Firstly, we want the receiver to lock onto and stay locked to the signal in which we are interested, and not jump to a nearby strong signal. Secondly, by using a narrow bandwidth the receiver will stay locked onto a signal even in a high level of noise.

Each time a signal is received the receiver automatically locks onto it. The time to do this must be small, or portion of the incoming signal will be lost.

Another advantage of a synchronous receiver is the number of different types of signal it can receive. If the frequency response curves of the I and Q channels are such that very low frequencies are attenuated heavily, we can then receive a.m., narrow band f.m. and p.m. as well as d.s.s.b.c. If the servo loop can be broken we can also receive s.s.b. and c.w.

THE SAD STORY OF A MULTI-OP. STATION IN THE NATIONAL FIELD DAY

C. LUCKMAN,* VK3ADL

THIS story is like the one that got away. We should have won our section, but . . . It all began when Charlie VK3AZR and myself were speculating on the number of electrical appliances which could be operated from the 230 volt 5 c/w 2kw. petrol alternator that I had borrowed from a local C.M.F. Regiment. Why not replace the toasters, fans, shavers, juicer extractors, etc., with Hams and transmitters? Why not a rig for each band up to one metre?

The blueprint, after a number of phone calls and arguments, called for two departments. The h.f. department consisted of Charlie VK3AZR and his all-band rig, George VK3WJ and his all-band rig, my 40 and 15 metre rig, plus Max VK3AKT and Kelvin VK3LL. The v.h.f. department comprised Jock VK3ZDG with his 6, 2 and 1 metre rack and receivers, Ian VK3ZBP and his 6 metre rig, and John VK3ZAI. Two tent sections for each and a QTH on top of a bare high hill at Donnybrook completed the fundamentals. How could we possibly be beaten?

By 1500 hours on Saturday afternoon, Jock finished soldering plugs, etc., to his 2 cwt. rack and we stacked his gear with mine into my 1932 "B Model" Ford and trailer, and Kelvin's Vauxhall, and rattled off towards Donnybrook. At 1545 hours it started to rain.

The QTH was Woody Hill (now a misnomer), by courtesy of Mr. George White, the owner. This hill is denuded of all live vegetation, consisting mainly of gravel and rocks. The track to the top is very steep and six sweating Hams were needed to get the alternator and accessories on my trailer to the top. It was still raining—heavier. There seemed only two places on the top where the gradient was less than one in fifteen, so these places became tent sites. The v.h.f. men had an Army type tent, about 6 ft. x 8 ft., and the h.f. tent was 14 ft. x 14 ft. with 6 ft. walls. The rain and strong wind—probably up to 30 m.p.h.—made organisation very difficult. There were only two raincoats amongst us—and only one kept the rain out. Everyone was thoroughly wet from the knees down—some from the hair down. The two tents were erected on tables built from packing case sides and an old door, and we shifted what we could from cars to tents.

RAIN CAUSED ALTERNATOR'S FAILURE

George was late and missed the track leading up to the top of the hill. A message via c.w. on the Ford's twin horns was later reported to have suffered very bad QSB due to strong wind. The alternator was roped to the trailer and covered with a tarp and packing case sides; it started easily and the electric lights began to burn. We put up a 40 metre dipole and the v.h.f. beams.

* 2 Milton Street, Canterbury, Vic.

It was now dark, as well as very wet and windy—then at 7.30 the alternator stopped delivering the juice and we were submerged into darkness and could no longer make hot toast over an upturned radiator. After the appropriate remarks concerning the alternator's ancestry we resorted to science and reason. Due mainly to the persistence of Max and George's sensitive nose (which smelt, literally, the path of the short circuit), we found a badly corroded 4-pin socket on the rectifying unit. Allah be praised, we had a spare.

During this time, Jock and Ian found John acting as a tent pole, the original having torn through the top of the v.h.f. tent. They evacuated some gear, made the rest as waterproof as possible and allowed the whole tent to collapse.

At 2130 hours we had electric light, hot toast and tea, and the only rig we could reasonably put on the air was Charlie's. Then the dipole would not load. After about half an hour we repaired the co-ax from a state of complete open circuit to a state of intermittent. Now we were on the air and that night we made six contacts on 40 metres. However, of the three v.h.f. receivers, three would not receive. Causes were: one broken speaker lead, one defunct noise limiter, one unknown. The speaker lead was repaired and things brightened slightly. Ian stoked up his 6 metre gear in the car, and managed one contact at 2250 hours. At 2300 the v.h.f. men moved into the h.f. tent and joined us in making relevant observations about the wind (probably reaching 40 m.p.h.) by that time, the rain, and the Federal Contest Committee's choice of the weekend, etc., etc.

At midnight we stopped making hot toast and tea and thought about sleep. I then noticed one of the results of marriage, i.e. all the married Hams either went home to sleep or slept in cars, and therefore were both comfortable and dry.

Around 0600 hours on Sunday I was conscious of being wet around the neck and shoulders. Water had run from the tent wall to the stretcher mattress. At 0615 hours, Jock was apparently the most conscious of the trio sleeping in the tent and he staggered outside to replace the first tent peg to be uprooted by the wind which had strengthened and shifted further to the west. Ten minutes later, while in the course of speculating upon the wisdom of Murphy's law (if anything can possibly go wrong, it will) and its corollary (if it's still going, look out), six tent pegs came out and the tent folded inwards. Fortunately Max and George were on the scene quickly. We put large piles of rocks on each of the tent pegs in an effort to keep them in the ground. This was the first of four times the tent was destined to be blown in. It was still raining.

We looked around us, the v.h.f. tent looked like a large dirty white sheet in the red mud, the v.h.f. beams lay bent and twisted on the rocks, someone said "good morning."

Sunday morning was definitely windier, though the rain stopped around 0900 hours. We put up a long wire for George's ATR2B and a 15 metre dipole. The alternator was chugging very happily and we had some hot toast and tea. However, we had little chance of getting many contacts because the tent was rarely secure for more than 30 minutes, and it took every hand to hold and fasten it. The general estimate of the wind force was exceeding 50 m.p.h. at peak gusts.

Our first Sunday QSO on 40 metres was at 1011 hours. The v.h.f. men handled Jock's rack into the h.f. tent and after repairing co-ax and removing fine black dust from the relays, the first v.h.f. contact was made for Sunday at 1030 hours. The v.h.f. beams were continually being swung around by the wind despite the large piles of rocks stacked around the mast. Who was it that drove along Sydney Road, only a mile from us, whose signal lifted the 2 metre receiver from the table, but who ignored our calls?

I began to photograph the desolation with a camera which was later found to have a faulty shutter.

COLLAPSE OF TENT WALLS

At 1135 hours, while someone was calling CQ 2 metres, and toast was being cooked over the upturned radiator, a record number of tent pegs were catapulted towards the heavens and two tent walls enveloped the rigs, stove and us. After about five frantic minutes, Jock remembered that the whole unexpurgated fiasco, including tent flapping, wind and unusually violent language, was being broadcast over 2 metres. He crawled under the debris to turn off the rig—fortunately, we had remembered the radiator earlier. The tent was down for 25 minutes this time. Charlie arrived 30 minutes later (he had gone home to sleep), looking very fit and healthy—his health would have been in danger had he not brought hot tea!

About 1400 hours we remembered we had not had any lunch, so we had tea and hot toast adorned with bully beef or cheese. Shortly after, the owner of Woody Hill arrived with some of his family and seemed impressed with what he found. He told us that we caused some interest during Saturday night because he was telephoned by several locals who no doubt wondered who would be crazy enough to spend the night on Woody Hill when there was a severe storm.

On the h.f. bands 40 metres was clearly the best; we made up to six contacts in rapid succession on the one frequency. We were rather surprised by the lack of c.w. on 40 and on a

couple of occasions there were no stations on c.w. at all. We tuned up on 15 metres a couple of times looking for DX but we worked only a ZL. Unfortunately, George's ATR2B on 80 metres caused quite bad second harmonic QRM and he was receiving strong sub-harmonics from the 40 metre transmitter. On 6 metres contacts rolled in very quickly. A contact on 2 metres with a station in Geelong was pleasing. The last three hours of the Contest were very encouraging, and at times very fast operating was required to get maximum results. This was the time when the efficient rigs proved their worth.

In about six hours of operating on h.f. and 4½ hours on v.h.f. (sometimes with open feedline), we contacted 93 stations. Despite the foul weather, we enjoyed ourselves and we learnt a lot about N.F.D. organisation.

TECHNICAL PROBLEMS

Part of our plans were technically feasible. We were worried about reducing the power to 25 watts, but this was easily done by using a high wattage resistor across the modulation

the district and no barriers to Geelong, Ballarat or to the north. This type of QTH is not very difficult to find.

H.f. antennae are more of a problem. General agreement after the post-mortem is to have two trap antennae. One for 40 and 80, one for 20, 15 and 10 metres. Probably they should be vertical since this eliminates the quite serious problem of finding a hill with a clear take off, but having tall trees 66 ft. and 132 ft. apart. (Has anyone ever found tall trees the right distance apart?)

We were probably too ambitious with the amount of gear we carried, although had the weather been more reasonable we would have used more of the gear.

The alternator was a complete success, apart from the short across the 4-pin socket (due no doubt to the thing being quite wet) and the small petrol tank capacity. The governor on the engine was poor, and the belt drive combined to give a continuous voltage fluctuation of about 7 volts, but this had no effect on our gear. It is worth remembering that alternators are a lot easier to get than most people think,

e.g. Jock uses a synchronous motor as an alternator, driven by a small motor mower engine, with excellent results.

IMPORTANT POINTERS

Here are a few points we think are important about Field Days: Your gear, particularly co-ax, that works at home does not necessarily work in the field; a close survey of the site is desirable to check trees, tracks and hazards; a caravan or a furniture van is far better than a tent; no sleeping in the operating shack; prepare for the worst weather, for it is better to sweat from heat than die from exposure; if you use a petrol alternator have enough tank capacity to run the thing for more than one hour; and don't forget to ground the alternator or power supply.

The 1960 N.F.D. was emphatically the best we can remember. We worked 29 portable and mobile stations. By Sunday evening we were all very tired, sore and grubby—but we will be back next year and perhaps win the Contest then!

(Next month it is hoped to publish other comments of activity in the fast becoming popular National Field Day Contest.—Editor.)



Views of another multi-op. station, VK3OM/P, operating in the National Field Day. Left: Bill VK3TX and Andy VK3JU operating a Panda "Cub" and ARRA. Right: Ron VK3OM and Ron VK3RN at the controls of a DX40 and home-brewed 807 final tx's and two HRO rx's. The 2 and 6 mx gear is located between VKs 3UJ and 3OM.



transformer to compensate for the change in impedance. We believe that 40 and 80 metres cannot easily be worked simultaneously, but 40 or 80 can be used with any other band. Interference into the v.h.f. receivers was limited to occasional spots and did not worry v.h.f. reception, and there was no sign of the v.h.f. signals blocking the h.f. receiver.

Because of the present distribution of activity, we think that it is desirable to keep one rig almost solely on 40 metres phone and c.w., with occasional excursions using the same rig to 80 metres, when 40 is temporarily unproductive. Another all-band rig should work 20, 15 and 10 metres, probably in that order of priority. VK stations should be given priority over DX stations because the DX stations have to be instructed about the RST/NR. If the N.F.D. Contest approaches the R.D. Contest in popularity, it may be necessary to have another h.f. rig—but this is unlikely to happen for a few years. V.h.f. is limited with the number of stations which can be worked and the minimum requirement for gear would probably be top-class 2 and 6 metre rigs, not necessarily working simultaneously, and a 1 metre rig.

Antennae for v.h.f. are relatively easy, but the site must be located on a high hill having a good general command of

Hint for 122 Transceiver Owners

From remarks heard on the air, it appears that intermittently "blown LT fuse" is a fairly common occurrence.

A simple explanation was found for this trouble after many unsoldered joints and considerable time expended tracking it down.

As all the receiver valves have aluminium shields (with the exception of the output valve) which are earthed via the valve pin No. 1 by a metal strip, and all the sockets have exposed pin clips on top of the ceramic socket, it does not take long to work out the result, if the valve is pushed down hard into the socket.

In some cases in the series filament line, it merely shorts out one valve and in others, two valves, leaving the series resistors and the remaining valves to take the applied 12v. with danger of burnt-out filaments.

The valve shield strip and socket responsible for the blown LT fuse is V3A, as pin No. 1 is at earth potential and pin No. 8 is used as a tie point for +12v. LT wiring, consequently when V3A is pushed right down in the valve socket, pin No. 1 and pin No. 8 are

shorted, with another fuse to be replaced as the result.

It is suggested that a piece of insulating material be placed between the valve shield earthing strip and the valve socket pin clips.

As there is only 12v. d.c. to be provided for, something thin could be used, such as empire cloth or tape, mica, even a piece of adhesive tape would be adequate for the job.

The writer used Empire cloth tape, ½" wide, 5 mil. thick, cut to fit between three valve pins with a hole punched the size of a valve pin, to fit over centre pin. This was slid up the pin to cover the earthing strip. (With a little "goo" to hold in position if desired.)

—E. C. Manifold, VK3EM.

TASMANIAN DIVISION (W.I.A.) HAS NEW BOX NUMBER

Readers are requested to note that all correspondence for the Tasmanian Division and the Federal Contest Committee of the Wireless Institute of Australia should be, in future, forwarded to BOX 851J, G.P.O., HOBART, TAS., except correspondence and cards appertaining to the QSL Bureau.

ORYX

(LOW VOLTAGE)

**MINIATURE
SOLDERING
INSTRUMENT**

*A must
for
Transistors*

(actual size)

PROTECT YOUR TRANSISTORS WITH ORYX

There is a danger of damage when soldering to transistor leads, due to A.C. leakage currents. The use of a low-voltage transformer supply, with earthed secondary is therefore recommended. Take care also that too much heat is not applied to flying leads. The ORYX iron, and a heat-sink such as heavy pliers gripping the lead between the contact point and the transistor, will ensure protection.

- ▶ Fast heating element, ready for operation in less than one minute.
- Exclusive design features resulting in universal acceptance of ORYX as the standard miniature soldering instrument.
- The ORYX long life element will outlast several bits which are of tight push-on fit.

Bit Dia.:	Volts	Watts	Nett Weight	Length	Recommended Use
Model 6 1/16" (Fixed)	6	6	0.25 oz.	6"	Electrical measuring instrument fine assemblies, hairsprings, R.F. pick-up and speech coils, hearing aid sub-assemblies, etc.
Model 6a 3/32" (Push-on)	6	6	0.25 oz.	6"	As for Model 6 (for extremely delicate work only).
Model 9 5/32" (Push-on)	6, 12, 24-27½	8.3	0.25 oz.	6"	Hearing Aids, Radio and TV Sub-assemblies, Coils, Electronic Instruments, Model Construction, Electro-Medical, etc.
Model 12 3/16" (Push-on)	6, 12, 24-27½	12	0.5 oz.	6.25"	Radio, Television, and Telecommunications assemblies.
Model 18 3/16" (Push-on)	6	18	0.75 oz.	7½"	For heavier work, heat capacity equivalent to that of most 80 watt soldering irons.

Australian Distributors:

MANUFACTURERS SPECIAL PRODUCTS PTY. LTD.

47 YORK STREET, SYDNEY

MELBOURNE: Amalgamated Wireless (Australasia) Ltd. ADELAIDE: Newton McLaren Ltd. PERTH: Atkins (W.A.) Ltd.; Carlyle & Co. (1959) Pty. Ltd.; A. J. Wyle Pty. Ltd. BRISBANE: Chandlers Pty. Ltd. HOBART & LAUNCESTON: Amalgamated Wireless (Australasia) Limited.

MSP3.58

BOOK REVIEW

This month we have a number of items of very real interest to Amateurs. The first two items we are going to talk about are not books at all. For years, you have seen these advertised in the American journals, but they have not been available in Australia.

OHM'S LAW CALCULATOR AND REACTANCE SLIDE RULE

The first item is the Ohmite Ohm's Law Calculator. This device can be manipulated to quickly answer any Ohm's law problem, as you would expect from its name. It is priced at 6/9 posted.

The second item is of a more complicated nature although it is similar in design. This is the "Shure" Reactance Slide Rule. With this device you can find inductive or capacitive reactance for any frequency between 0.1 of a cycle and 10,000 megacycles. On the other side of this slide rule are a number of scales permitting you to find the values of components for use in tuned circuits for operation anywhere in the frequency spectrum. This slide rule comes to you complete with an instruction booklet which will enable the reader to calculate any value he desires. Price 16/- posted.

Our copies from McGill's Authorised Newsagency, 183 Elizabeth St., Melbourne, C.I.

"CQ" LICENCE GUIDE"

No. 114 from the "CQ" Library, this book was written especially for those interested in obtaining an Amateur licence and should be of particular interest to the s.w.l. Whilst it has been written for beginners in the U.S.A., it still contains a large quantity of information of use to Australians.

There is a chapter on learning the code, complete with instructions for building a transistor code practice oscillator. This is followed by 80 odd pages crammed with typical examination questions and the correct answers to these questions. Used in conjunction with the standard text books, this publication could prove invaluable to the student.

Our copy from McGill's Authorised Newsagency, 183 Elizabeth St., Melbourne, C.I.

"KNOW YOUR OSCILLOSCOPE"

By Paul C. Smith

An inexpensive publication of 145 pages telling you in simple language

how to use your oscilloscope to best advantage. Oscilloscopes of various makes are described and so are some of the probes and other accessories that help to make the oscilloscope the most versatile measuring instrument available to the electronic industry.

Circuitry is discussed and waveforms are illustrated so that there will be no doubt about the measurements being made. Price 20/9, postage 1/3.

Our copy from McGill's Authorised Newsagency, 183 Elizabeth St., Melbourne, C.I.

"CQ" ANTHOLOGY"

The Best of "CQ" 1945-1952

This book, published in 1953 by the Cowan Publishing Corp., New York, contains a great number of articles that will be of interest to VKs. Such subjects as g.d.o.s., antennascopes, BC348, SCR522, discone antennae, the BC221 (SCR211) frequency meter and many others are covered. Well worth its modest price of 21/- plus 1/3 postage.

Our copy from Technical Book and Magazine Co., 295 Swanston St., Melbourne, C.I.

"STEREO HANDBOOK"

Written by that master of audio, G. A. Briggs, in his usual free and easy style, salted with the occasional touch of good humour and augmented by contributions from experts such as Cooke, Crowhurst, Kelly, Watts and West, this book is intended to help the Amateur to understand stereo and its implications.

The fifteen chapters contain no less than eighty-eight illustrations, most of which are original and maximum space has been allocated to pick-ups, loudspeakers and recording techniques in that order of importance.

The book is non-technical throughout and should be easily understood by any reader who, like the author, can count up to twenty. Price 17/9, plus 1/- postage.

Our copy from McGill's Authorised Newsagency, 183 Elizabeth St., Melbourne, C.I.

"RADIO & T.V. HINTS"

Edited by Martin Clifford, this is a very handy collection of hints and kinks pertaining to electronic work. The volume contains some hundreds of ideas which we all find useful in our daily work in the electronic field. It is a publication which comes from the well known Gernsback library and is recommended to all interested in electronics, either professional or amateur. Price 10/3, plus postage.

Our copy from McGill's Authorised Newsagency, 183 Elizabeth St., Melbourne, C.I.

Two-Band Crystal Locked V.H.F. Converters

I. MacMILLAN,* VK3ZDG

It is sometimes desirable to use the same oscillator chain for two converters, and the problem arises how to choose an i.f. such that the same crystal oscillator may be utilised. This may be found by utilising the formula:

$$f_o = \frac{f_2 - f_1}{n - 1}$$

where f_o is the local oscillator frequency for the lower frequency converter;

f_2 is the lowest frequency in the high band;

f_1 is the lowest frequency in the low band;

n being the number of times the low frequency local oscillator is to be multiplied for use as the high frequency local oscillator.

Example:

It is desired to make a converter to cover the 50 and 144 Mc. bands, using the same i.f. tuning range, with a common local oscillator, using a tripler following the 50 Mc. local oscillator stage.

Substituting:

$$\begin{aligned} f_o &= \frac{144 - 50}{3 - 1} \\ &= \frac{94}{2} \\ &= 47 \text{ Mc.} \end{aligned}$$

The i.f. at 50 Mc. is therefore 50 - 47 = 3 Mc.; at 51 Mc, 51 - 47 = 4 Mc. At 144 Mc. it is 144 - (47 x 3)

$$\begin{aligned} &= 144 - 141 \\ &= 3 \text{ Mc.} \end{aligned}$$

and of course at 145 Mc. it is 145 Mc. - 141 Mc. = 4 Mc., etc.

Note that this technique cannot be used with harmonically related bands, as a harmonic of the local oscillator will fall on the band edge in each case.

* 1 Norfolk Road, Surrey Hills, E.10, Vic.

CHOOSE THE BEST—IT COSTS NO MORE



**Resin Core
SOLDERS**
for reliable connections

O. T. LEMPRIERE & CO. LIMITED

Head Office: 27-41 Bowden Street, Alexandria, N.S.W.
and at Melbourne • Brisbane • Adelaide • Perth

mended to all interested in electronics, either professional or amateur. Price 10/3, plus postage.

Our copy from McGill's Authorised Newsagency, 183 Elizabeth St., Melbourne, C.I.

"101 WAYS TO USE YOUR V.O.M.

AND V.T.V.M." and

"101 WAYS TO USE YOUR OSCILLOSCOPE"

These are two of what appears to be a new series of books on the use of test equipment. Each of them takes the full quota of jobs for the respective instruments and describes each in lucid detail giving information on many applications which the average equipment owner would find difficult to recall at short notice and hints on easily made "gimmicks" that add materially to the usefulness of the instruments dealt with in the books. Prices are 20/9 and 25/9 respectively, plus 1/- postage.

Our copy from McGill's Authorised Newsagency, 183 Elizabeth St., Melbourne, C.I.

TYPE 65

General purpose with low frequency response suitable for lively halls.

TYPE 66

P.A. use where less low frequencies are required than the 65 with a lift in the middle frequency to ensure high output without feedback.

TYPE 67

Communication use, has a further reduction in low frequencies than the 66 and increase in high frequencies for intelligibility through noise.

THREE INDIVIDUAL TYPES IN THE FAMILIAR "65" CASE

★

Available in Low (M.D.)
50 ohms, and High
(M.A.) Grid Impedance.

★



Retail Price including Sales Tax

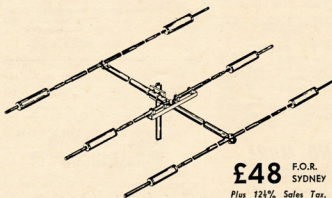
Type 65 MA	.....	£11/0/7
" 65 MD	.....	£8/19/0
" 66 MA	.....	£11/3/6
" 66 MD	.....	£9/3/0
" 67 MA	.....	£11/3/6
" 67 MD	.....	£9/3/0

ZEPHYR PRODUCTS PTY. LTD.

58 HIGH STREET, GLEN IRIS, S.E.6, VICTORIA

PHONES: BL 1300, BL 4556

Famous "TRAP MASTER" Aerials



£48 F.O.R.
SYDNEY
Plus 12½% Sales Tax.

by **Mosley**

Model TA-33-JR (illustrated) is a three-band trap type rotary beam aerial designed to function with equal efficiency on 10, 15 and 20 metre bands. No mechanical switching is needed nor are tuning devices of any sort required. If your rig is capable of working into a 52 ohm load, simply connect a single 52 ohm coax line between transmitter and aerial, tune transmitter to any one of the three bands and sit back to enjoy the finest DX and the most satisfyingly solid contacts of your Ham career!

With proper installation, your TA-33-JR will provide up to 8 db. forward gain over a reference dipole and will offer 25 db. front-to-back ratio. The TA-33-JR will handle up to 300 watts input to the final amplifier at 100% amplitude modulation.

WORK 3 BANDS - 10, 15 & 20 - EQUALLY WELL with "TRAP MASTER"

DX AERIALS of WORLD RENOWN!

Australian Agents: MAURICE CHAPMAN and CO. PTY. LTD., 158 Clarence Street, Sydney. BX 5127

PROMINENT AMATEUR PASSES BEYOND THE VALE

JOHN MOYLE, VK2JU—amateur, writer, engineer and musician—passed away on the 10th March after a short illness. He is survived by a wife and two daughters.

Born in Malvern, Victoria, on the 28th February, 1908, John Moyle crammed into a short life of 52 years more than most people do in a greater number of years, and in so doing put into his widely varied interests more than he ever took from them.

He was educated at Scotch College and at an early age gave every indication of ability in writing, composing, debating and musical appreciation, all of which ultimately proved to be his avid interests throughout his career. The principal of Scotch College, Dr. W. S. ("Bill") Littlejohn, wrote in John's testimonial: "The list of offices which he holds in the school shows that he is a lad of high ability and of exceptional energy. He has a marked literary faculty, and if he finds scope for his powers in that field, he may be relied on to do his utmost to bring distinction to himself and his employer. He has earned the thanks of the school for his excellent work as Editor of the 'Scotch Collegian'."

As Editor of the school magazine, John showed his ability in this field, fruits of which are written throughout many years of administration paperwork of the Wireless Institute of Australia, the Uniform Divisional Constitution of the Institute being primarily John's work as a typical example of his contribution to the affairs of the W.I.A.

Apart from his writing ability, John had a remarkable ability in the debating field, winning the Scotch College debating prize in his last year at school in 1926, during which year he also wrote the Colclough Prize Song.

Those Amateurs who have experienced John's debating ability at Federal Conventions will recall it as clear-cut, concise and to the point, leaving no doubt as to his reasons and always delivered in a manner typical of a person with clarity of thought well above average.

His first job in radio was with 3DB Melbourne where he assisted Ren Miller (well known to Melbourne listeners for his cricket broadcasts with Charlie Vaud in the 30's) in the commercial advertising department. During this time he also wrote short stories and technical articles on radio for the "Listener In" (Melbourne).

In the depression years, he edited the "Gippsland and Northern"—a Melbourne farming magazine—where his enthusiasm was directed to the car-reviewing section. Interested in everything mechanical, John was always extremely proud of the performance of his own motor car, maintaining it always in perfect running order.

In 1932 he joined the staff of the Sydney publication, "Wireless Weekly,"

in charge of answering technical queries. He later became Assistant Technical Editor, then Technical Editor, during which phase of his career he gave regular weekly talks on the technical side of radio over station 2UE Sydney.

In April 1939, "Wireless Weekly" became a broadcasting programme weekly publication and its technical activities were separated into a monthly magazine, "Radio & Hobbies". From being Technical Editor at its inception, John became Editor a few months later—a position he held till his death.



THE LATE JOHN MOYLE, VK2JU

Actually, John dropped his editorial duties during World War II, from 1941 to 1946. He joined the R.A.A.F. where he rose to the rank of Squadron Leader in charge of all radar publications at the Melbourne headquarters. Part of his work was producing Service manuals (many of which are still in use) which called for a high degree of journalistic talent and experience for which John was well fitted.

Apart from his great interest in writing and technical radio, his early appreciation of everything fine in music led him naturally into the field of audio with the accent on the reproduction of recorded music from disc, and latterly from both disc and tape. During the time he was making weekly technical broadcasts on station 2UE Sydney, he was also connected with the presentation of regular Sunday evening broadcasts entitled "Serenade to Music."

His work never finished when he left his office desk. Every minute of his time, often well into the early morning

hours, was spent writing, hamming, experimenting; he devoted many weeks of the year to music, writing the record review in "Radio & Hobbies", which had the unique reputation for combining keen musical appreciation with informed technical appraisal, and forever experimenting with audio amplifying equipment in search of the highest standard in high fidelity reproduction.

His work in this field led to the formation of the Sydney Recorded Music Society, of which John was a foundation member, and in more recent years he gave demonstrations in Sydney of "stereo" and "monaural" sound reproduction which were hailed as being the finest ever heard in Australia.

After the last war when the Postmaster-General's Department issued permits for the installation and use of v.h.f. mobile radio-telephone systems, John capitalised on his long Amateur experience by putting into service, with the assistance of the technical staff of "Radio & Hobbies", the first of such installations to be used by a daily newspaper in Australia. His experiments, with Amateur equipment, dates back to 1948 and it is to his credit that the final equipment which went into this first installation is still in service with the Sydney "Sun" newspaper.

As a licensed Amateur from 1932, he gave to this hobby the same intense interest and concentration as he gave to everything else he did in other fields, devoting many years to research in the v.h.f. frequencies at a time when this was new to Amateurs in Australia.

As a member of the New South Wales Division he gave many years of his hard pressed time to the Wireless Institute of Australia both in the Divisional and Federal administration. He was Federal Councillor and President of the N.S.W. Division for some years, and even after he dropped out of administrative duties he continued to devote his interest to the affairs of the Institute.

In 1959 he was selected to represent the Wireless Institute of Australia as an officially accredited member of the Australian delegation to the Administrative Radio Conference of the International Telecommunications Union held in Geneva, Switzerland. He devoted to this task, despite failing health which resulted in his death, the same tenacity of purpose which he exhibited throughout his career. Members of the Australian and overseas delegations praised highly his work in Geneva on behalf of the Australian Amateur Service.

It is with deep sorrow that the Federal Executive, Federal Council members of the W.I.A. and Australian Amateurs generally, mourn the passing of a truly great Amateur. Sincere condolences are extended to Mrs. Moyle and her two daughters.

HINTS AND KINKS

PARALLEL-FED PLATE MODULATION

The circuit shown in Fig. 1 makes use of a modulation principle that is more or less standard in commercial broadcast transmitters but is seldom used in Ham equipment. It consists of two capacitors and one filter choke in addition to the usual plate modulation components.

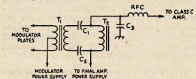


Fig. 1—Parallel-fed plate modulator. Capacitors C1 and C2 should have a voltage at least twice the modulated amplifier plate voltage. C1, C2—4 μ F. C3—0.005 μ F, bypass. T1—Modulation transformer. T2—Filter choke, 20 or 30 henrys (capable of carrying amplifier plate current).

Capacitors C1 and C2 isolate the r.f. amplifier plate voltage from the modulation transformer and if, for some reason, the r.f. amplifier is turned off before the modulator, the choke will act as a load and protect the modulation transformer.

—Michael Novick, K2EKC, "QST," Oct. '58.

HOW IS YOUR MODULATION?

When watching a c.r.o. monitor recently, I was reminded of an article I had read somewhere sometime. I think it was in a pre-war issue of "Radio," but I wouldn't be sure. Anyway, it went something like this.

An a.m. transmitter is unsymmetrical for overmodulation, cutting off abruptly with splatter at 100% downward modulation, but it is usually capable of going beyond 100% upward modulation without ill effects.

Now it so happens that the waveform of the male voice is also unsymmetrical,

having higher peaks in one direction. So when the two are put together, it pays to see that the peaky side corresponds to upward modulation.

From memory it paid 6 db. extra audio on the carrier for the same peak downward modulation. As there is a 50/50 chance that your modulation is the wrong way round, why not reverse your microphone connections or one side of an audio transformer and see if you have been missing out.

Of course, this does not apply if you use a clipper. Nor if you are a female of the species as your waveform is symmetrical.

A. K. Head, VK3AKZ.

D.X.C.C. LISTING

Listed below are the highest twelve members in each section. New members and those whose totals have been amended will also be shown.

PHONE

Call	Cer. Cnt- No. rises	Call	Cer. Cnt- No. rises
VK6RU	2 244	VK6KW	4 194
VK6MK	43 236	VK4HR	12 192
VK5AB	45 224	VK3HZ	3 176
VK4FJ	21 213	VK4RW	23 164
VK3WL	14 211	VK3EE	10 163
VK3ATN	26 204	VK5DB	31 161

C.W.

Call	Cer. Cnt- No. rises	Call	Cer. Cnt- No. rises
VK3CX	26 262	VK4HR	8 216
VK4FJ	29 246	VK3XU	45 213
VK3KB	10 245	VK3YL	59 203
VK3FH	15 226	VK6RU	18 202
VK3NC	18 226	VK5BY	45 202
VK3HZ	6 222	VK3EO	2 191

Amendments

VK5JC .. 54 144

OPEN

Call	Cer. Cnt- No. rises	Call	Cer. Cnt- No. rises
VK6RU	8 250	VK3NC	77 229
VK4FJ	32 251	VK3WL	45 225
VK3ACX	6 250	VK3XU	61 221
VK6MK	74 241	VK3HG	3 215
VK4HR	7 233	VK3JE	12 210
VK3BZ	4 231	VK3ATN	69 210

Amendments

VK5JC .. 63 150

SELECTION OF AN ANTENNA TOWER

(Continued from Page 9)

rotator and heavy-duty 10 metre ground-plane antenna. Radial fins project out in four directions from both the bottom of the post and that portion just under the surface. It is set into about five feet of sand, the last two and a half of which is watery. In fact, after reaching a depth of three feet, it was necessary to bail continuously in order to complete the hole. This post shows no "budge" even when the tower is tilted horizontally across it with all weight on the ground post. Mounting the ground post in sand or earth, rather than in concrete, definitely helps to prevent shear at the ground line, since the soil will tend to compress under force of the post. Radial fins such as described will withstand a pressure of 4,000 lbs. per square foot at a depth of five feet in normal soil. At six inches below the surface, the figure of 1750 lbs. per square foot would be approximate. Also, the ground post itself will withstand considerable pressure in the soil. A 5½ inch o.d. ground post set five feet into the soil will withstand a pressure of 1150 pounds per lineal foot averaged along its five-foot length underground. This particular tower was recently moved from one QTH to another in a matter of three hours, with three willing hands working on the project.

TOWER PROTECTION

Towers are often finished off in a traditional aluminum color. An often neglected and expensive mistake is that of not determining the proper finish for the area where the tower is to be used. In areas which have a high incidence of atmospheric corrosion, it is advisable that the tower be hot-dip galvanised by total immersion after fabrication. This will protect all surfaces, including the internal surfaces of the tubing. On the other hand, if the corrosive action in the atmosphere is low, a painted tower will, with care, give lifetime service.

The serious Amateur Radio Station owner will do well to give much careful consideration when he selects a supporting tower for his rotary beam. It is a commodity which must last for years and not become obsolete. But, it must be able to do a man-sized job.

UNIFORMS DUST COATS

for your Office Staff, Factory, Workshop, Servicemen.

★
Bowls Frocks, Tennis Frocks, for the retail trade.

D. MILBURN & CO.

3 Railway Avenue, East Malvern, S.E.5, Vic. Phone: 211-3131

IRONCORE

Soldering Iron Transformers

TYPE T1/50 FOR USE WITH SCOPE IRON

TYPE T3/56 FOR USE WITH 6V. ORYX IRON

TYPE T3/58 FOR USE WITH 12V. ORYX IRON

IRONCORE ELECTRICALS PTY. LTD.

HIGSON LANE, MELBOURNE, C.1

Phone: 63-4771

Page 19

NEW EQUIPMENT

AR85: 9 Mc. Phasing Type S.S.B. Exciter complete with Audio P.S.N., Linear Amp., Speech Amp., Selectable Sidebands and Phase Modulation. Valve types: 12AT7 Audio Amp., 12AT7 Audio Driver and Xtal Oscillator, 12AT7 Balanced Audio, 2 x 6AL5 Diodes, 6BA6 Linear. Less Valves £25/10/0.

AR85A: Similar to above but includes Mixer 6BE6 for multiband operation. £27/10/0.

AR85B: S.S.B. Mobile (7 Mc.) Phasing type, similar valve complement to AR85 unit, with 807 P.A. and 6BL5 Clamper Unit. Fits readily in glovebox of most cars either 6 or 12 volt. Complete with valves, Audio P.S.N., but less Power Supply. Input to 80 watts. By the addition of mixer stage and P.A. all-band operation can be had for home station use. Xtal operation with provision for external V.F.O. Price £27/10/0.

AR860: All-band Band-switched Sideband Tx. Includes: AR85 Exciter, 6CK8 Mixer, 6AG7 Buffer, 807 P.A., 6CL6 Clamper. Requires external V.F.O. mixing frequencies (BC457 modified), and Power Supplies. Pi-Coupled Output metered in P.A. Circuit. Cabinet size: 15 in. wide x 9 in. high x 10 in. deep. Power Supply requirements: 250 volts 120 mA.; 800 volts 100 mA. Price including valves £33/10/0.

★

USED EQUIPMENT

SPECIAL FOR APRIL: 1 only 150 watt A.M. Transmitter. Two units: (1) Table Top R.F. Section, Geloso, 6146, 813. (2) Power Supplies, Modulation and Speech Clipper, all in heavy steel box. Unit is only 12 months old and in excellent order. Price £70/0/0.

ONE ONLY imported Phasing type 9 Mc. Sideband Generator complete with VOX. Attractive Cabinet. In excellent going condition but less valves (standard types). Has 9 Mc. linear stage added. Price £25/0/0.

★

AMATEUR RADIO SERVICE

MANUFACTURERS OF ALL AMATEUR RADIO EQUIPMENT

605 ABERCORN ST., ALBURY, N.S.W. (P.O. BOX 439). Phone: Albury 1695

CHOOSE THE BEST—IT COSTS NO MORE



Resin Core SOLDERS

for reliable connections

O. Y. LEMPRIERE & CO. LIMITED
Head Office: 27-41 Bowden Street, Alexandria, N.S.W.
and at Melbourne • Brisbane • Adelaide • Perth

VACUUM MOUNTED CRYSTALS

for general communication frequencies in the range 3-14 Mc. Higher frequencies can be supplied.

**THE FOLLOWING FISHING-CRAFT
FREQUENCIES ARE AVAILABLE IN
FT243 HOLDERS, 6280, 4095, 4535, 2760, 2524.**

5.500 Kc. T.V. Sweep Generator Crystals, £3/12/6.

ALSO AMATEUR TYPE CRYSTALS—3.5 AND 7 Mc. BAND.

Commercial—0.02% £3/12/6, 0.01% £3/15/6, plus 12½% Sales Tax.

Amateur—from £3 each, plus 12½% Sales Tax.

Regrinds £1/10/-.

CRYSTALS FOR TAXI AND BUSH FIRE SETS ALSO AVAILABLE.

We would be happy to advise and quote you as to the most suitable crystal for your particular application, either in the pressure or vacuum type holder.

New Zealand Representatives: Messrs. Carrel & Carrel, Box 2102, Auckland.

BRIGHT STAR RADIO

46 Eastgate Street, Oakleigh, S.E.12, Vic.

Phone: 57-6387

PREDICTION CHART, APRIL '60

Me. E. AUSTRALIA — W. EUROPE S.R. Me.

45	0	2	4	6	8	10	12	14	16	18	20	22	24	45
28														28
21														21
14														14
7														7

E. AUSTRALIA — W. EUROPE L.R.

45	0	2	4	6	8	10	12	14	16	18	20	22	24	45
28														28
21														21
14														14
7														7

E. AUSTRALIA — MEDITERRANEAN

45	0	2	4	6	8	10	12	14	16	18	20	22	24	45
28														28
21														21
14														14
7														7

E. AUSTRALIA — N.W. U.S.A.

45	0	2	4	6	8	10	12	14	16	18	20	22	24	45
28														28
21														21
14														14
7														7

E. AUSTRALIA — N.E. U.S.A. S.R.

45	0	2	4	6	8	10	12	14	16	18	20	22	24	45
28														28
21														21
14														14
7														7

E. AUSTRALIA — N.E. U.S.A. L.R.

45	0	2	4	6	8	10	12	14	16	18	20	22	24	45
28														28
21														21
14														14
7														7

E. AUSTRALIA — CENTRAL AMERICA

45	0	2	4	6	8	10	12	14	16	18	20	22	24	45
28														28
21														21
14														14
7														7

E. AUSTRALIA — S. AFRICA

45	0	2	4	6	8	10	12	14	16	18	20	22	24	45
28														28
21														21
14														14
7														7

E. AUSTRALIA — FAR EAST

45	0	2	4	6	8	10	12	14	16	18	20	22	24	45
28														28
21														21
14														14
7														7

W. AUSTRALIA — W. EUROPE

45	0	2	4	6	8	10	12	14	16	18	20	22	24	45
28														28
21														21
14														14
7														7

W. AUSTRALIA — N.W. U.S.A.

45	0	2	4	6	8	10	12	14	16	18	20	22	24	45
28														28
21														21
14														14
7														7

W. AUSTRALIA — N.E. U.S.A.

45	0	2	4	6	8	10	12	14	16	18	20	22	24	45
28														28
21														21
14														14
7														7

W. AUSTRALIA — S. AFRICA

45	0	2	4	6	8	10	12	14	16	18	20	22	24	45
28														28
21														21
14														14
7														7

W. AUSTRALIA — FAR EAST

45	0	2	4	6	8	10	12	14	16	18	20	22	24	45
28														28
21														21
14														14
7														7

John C. Pinnell, VK2ZR
15 Summit Avenue,
Earlwood, N.S.W.
Phone: UW 4248.

During the month DX conditions were fairly consistent on 20 mx, the band being open to the same areas at the same times throughout the month. Americans being conspicuous by their absence, but now, have started to make their appearance again. 15 mx had been very poor but has improved over the past few days. Lack of activity is probably the reason for signals being so scarce. This is borne out by the fact that at times only one signal of good strength could be heard from say, Europe, then no more. The 3.5 and 7 Mc. bands are worth watching.

NEWS AND NOTES

For those who may wonder what all the different W calls are about, and if they count for WPX, here is the present means of identification. When the straight forward calls were exhausted, i.e., W, the prefix K was used. In the districts, the K was also ran out, so they started with WA. On the mainland novices were allotted KN in some districts and WV in others. On the other hand, novices in KY, for example, became WB6; in OH, KH9; in HS, and SD, WH9. In the U.S. Territories you will find WP4, WW6, WL7, etc. In these cases substitute K for the first W and you can then identify the country of the station. You can, at this juncture, obtain 32 different prefixes, all in order for WPX award. (2Q1.)

The big DXpedition by W4BPD in conjunction with possibly one or two Africans, is due to commence later this year, and for what might be the first time, DXers will be able to get the best chance to make contacts. After clearing the States, the present itinerary seems to be, Spain, Guinea, Liberia, Ghana, Sao Tome, Congo, Senegal, Gambia, Sierra Leone, Zanzibar, Adair, Comoros, Island St. Pierre, Providence, Fangarish Island, Gloucesters, Tromelin, Ethiopia, British Somaliland, Socotra, Mauritania, Saudi Arabia, Jordan, Egypt, Lebanon and Syria. He is going to keep 2QI posted with developments and if in time will be in these notes, otherwise in the VHF band.

TIBSB is expected to be on from Cocos Island again in Mid-April. S.A.b. will be used.

Two new prefixes have appeared as a result of break up of French West Africa. They are FF4 for Mauritanie and FF7 for Republique de Cote d'Ivoire. Possibly new country status will be showing up for DXCC. There is activity from both by stations previously signing FF0. (2QL)

Information available indicates that since 1st January, 1960, the former French Congo, now Republic of Congo, counts as a separate country for DXCC. As far as is known they are still using FQ8. (2QL)

The 7 Mc. band is opening up for good DX to a drop in the m.u.f. European stations can be heard from 0630z. It would be appreciated if the 7 Mc. phone boys kept clear of the c.w. section of this band.

OX3RH, in the far north of Greenland, is anxious to work VK stations. He can be heard in Sydney around 1200z.

It is understood that 9M2GR, who was very active from Penang, Malaya, has now packed up and gone back to Singapore.

European stations have been coming in with remarkable strength for about half an hour after 6 a.m. There should be no trouble in working them over a longer period from, say, 1930 to 2130z, operating on the 14 Mc. band.

LASSGI/P, on Jan Mayen Is., is coming through on the 14 Mc. c.w. band at 0930z with good strength. His QSLs will be a bit slow in arriving as he will have to wait until after the winter before he can return to his home in Oslo, when he will have a big job filling the cards.

ACTIVITIES

3.5 Mc. C.w.

* Call signs and prefixes worked.
z zero time—GMT.

BERS-1902: F2GGW, WLOP, WZPEO.
L3939: DJ2WR, DLIQ, DLIQW, DLIQS, DL3JV.
DLQO, HB1SF, OHSRH, OK2KMB, OK2YJ.
OK1AR, OK1OT, OK3FG, OK3KHE, OK3UH.
SM3VE, SM3BYJ, UA2BD, YO4WE, YU2NZ.
YU2CUV, YU3BGH, YU4RD, YU4GXY, UB5AQ.

7 Mc. C.W.

2AMB: G3LET*, G3BRE*, G4RZ*, CM2QN.
 2QL: G70dz VQ4FO*, HC4IE*, HC2IU*, FA-
 5FQ*, Q3ZLE*, ZSSAJ*, SMs*, JAS*, F3AD*,
 UA0*, QQ5IG, G, YU, UA1s.
 BERS-102: K8CVQ, UAOKFG, W0LYO.
 BERS-195: DM2AUB, DM2ABL, EA4FO, F3DM,
 HA5KAG, 1BAY, JA6AHY/MM, PAOPN, SP-
 1KAA, SP6BE, UA1DZ, UP2KNP, VQ4FK,
 VQ4GQ, YU1OW, YU2LP, YU3FOP.

7 Mc. Phone

2AQJ s.s.b.: ZL1ATQ*, W8EGB*.

14 Mc. C.w.

ZAMB: ETECE: KSAAZ: VQZTF: VSSPM:
ZSI0U: ZS3DE: EAECG: PG7KF: FB8ZZ:
LAING: (Jan) EAM: KW8BA/KMS: ZE:
Z0W: HK4JH: MP4BCU: JZ0HA: VSSPM:
SULMS: UA1KAA: (YL) GAN: SVWAC:
H01: (Jan) EAM: CUCG: ZS3DE:
UMKAA: VQZCZ: VQGWG: VQGRG: JQ:
4HT: VQ4KPB: VSSOC: XZ3GM: ZE3JO:
EA8CP: EA8CG: ISIDL: ZS3DE:
ZS3DE: ZS3DE: ZS3DE: ZS3DE:
FRTZD: VSSPM: LA2TF: PU/UA: ZB:
IPA: HC4IE: GD3FX: VQZWR: OX3RH:
H01: (Jan) EAM: CUCG: ZS3DE:
ZSR: CBV5: XCB3T: HZ1F: DUJA:
FASB: F2JA: FASD0: G3ING: GM3KZ:
H01: (Jan) EAM: CUCG: ZS3DE:
H01: (Jan) EAM: CUCG: ZS3DE:
4AA: LA9QY: OK3IK: ON4GX: OXB3Q:
OZ3WH: FASB5: FV5LZ: SMC1CA: SP:
H01: (Jan) EAM: CUCG: ZS3DE:
UREDX: VED1D: VK0JM: VR3Z: V5APC:
TU1EH: ZC4WK: 5M2GR: ZS3DE:
DL1IN: EA4FZ: KV4AA: OER:
O105: ZS3DE: ZS3DE: VQ4GQ: ZE:
ZS3DE: ZS3DE: ZS3DE: ZS3DE:

3JO*, ZEMJ*, XZB8B*, K/W*, KH8*, CE2AT
CNDJD, DUIGR, EA5FK, EAF5U, F2MB, F1PM
FKBAL, GSAMO, GW3DRK, GC2FMV, I1PD
VQ2RG, VO1DX, O25HW, SP2BA, SP2KAG
UA1KAE, U3KAA, UB3KI, UB3KAW, UA0IK
ZMSAA.

SRX: VU2ANI*, ZM6AP/ZM7*, ZMTDA*, LZ
IAK*, UC2KSA*, UC2KSB*, UR2KAE*, ZK
IKDA*, LZ2KCB*, KPMANS, KP4AOO*, VP
F2J2G*, FJ2J2G*, F2J2G*, T2CBA*,
FASR*, LUIDQB*, LUSHL, LU4DM, LU
5AQ*, PY4ZG*, YV5AK*, CE2AT*, ITIA*,
UIAD*.

[illegible]

14 Mc. Phone

3AMB. ITIAQ¹. TG8AI¹. HC2JF¹. CN8BB¹.
 KLTDAV¹.
 2AQJ s.s.b: V6VWD¹. KA2DM¹. KA2RJ¹.
 KAZIE¹. VY8AHE¹. HPILLO¹. H8IGA¹. HSIB¹.
 V56DH¹. S5MSRM¹. HBHET¹. V5BWBY¹. YV-
 5A¹.
 3AOM: CN8CS¹. COJXK¹. CTIJV¹. DJ2WD¹.
 EA3LI¹. EA7HB¹. HC8CL¹. HK3LZ¹. HK4D0¹.
 IIPDN¹. IITID¹. KJ8BV¹. KP4CZ¹. KW6DA¹.
 KM6¹. TG9AL¹. TG9HK¹. VK0IT¹. VK0WH¹.
 VU2ZM¹. XE1IT¹. XE1FT¹. YV5AG¹. YU3BY¹.
 VU2HM¹. XE1IT¹. XE1FT¹. YV5AG¹. YU3BY¹.
 5BS¹. 457NG¹. 9M2DQ¹. XE1FT¹. VR2DK¹.
 4DO: K.W. KH8. DU8VVL¹. OZ1SY¹. UA-
 000. CERC0. EA3IT. IC8B. OH6QL. VP2DX.
 3A2D. 4AHF. 3A2D. 4AHF. 3A2D. 4AHF. 3A2D. 4AHF.
 URF8. IY8A. SMV7Z. KP4CZ. KK6C.

139085: AP2BH, HK4AW, HL9KT, KA2BF
 KP42C, KP4AQX, HC5CL, VE3UOT, YN1H
 YV5AHF, YV5AIP, W0WFO (ND), W1FZ (NH)
 W1Y1E (Del.), 9M2DQ, 9M2GA. On s.s.b.
 CR8AH, CX2AX, CN8GR, CX2AY, CO2ZS, DU-
 75V, DL4ACN, DM4GE, JG3CWY, GWD2UR
 G2MA, HP4HC, HB9TL, HB9HK, ISGN,
 K4RFR, KC8CD, KU3YU, KV4AA, KA2KC
 KP4RF, KH8CLN, KH8UC, KA2AY
 KP4ZF, KP4AZ, KG8AF, KA2AA, KG1DO
 MP4BH, LU4OMG (YL), OA5H, OH2HN
 OA4GN/MM, PJ2AF, VS8EK, VP7BT, VS7BH

YU2ANI, YN1CK, YV5AFF, YV5FK, YV5AHE,
SM6SA, KE1CV, XE1SN, TI2HF, 9N1GW, ZS-
6KD (YL).

P. Seeber: CT2AH, DJ1BZ, DI4TN, G3HFD
GW3AX, EA3JE, HB9VM, I1BXX, LA2ZA
I1CVS, UA0LA, VU2BK, 4X6AS, 4X4HC, 3A2BF
BERS-195: I1RIF, I1THR, MP4DAA, VK01T

21 Me C w

3Q1: VEIRY, HCLJW.
 2ZK: G6VQ*, KA3FF*, KASNY*, KH6DJL
 KW6.
 4DO: K/Ws*, KH8s*, JAs*, DJ1XZ*, DJ4NG*,
 DJ5BD*, DL1LZ*, DL1JW*, DL1Ks*, DLAMQ*,
 DL7AA*, P8KV*, G3CHW*, HCLJU*, I1ZL*,
 I1UA*, I1CCM*, I1T1A*, HS1B*, OH5QN*,
 OH8RH*, OH6RC*, OK1AW3*, OK1MG*, SP-
 8FZ*, STAR*, DL1KJ*, DU7V*, OH8NO*,
 OK6FS*, OK6KZ*, OZ1EN*, SM2L*, SM-
 7B1R*, SP7TH*, UA0XW*, UA6GM*, UA4IF*,
 VU2MD*, VQ2JM*, VS1GZ*, YO3JS*, YU1EH*,
 YU1C*, UA1KA*, VQ1E, ZS1U.

21 Mc. Phone

3AQJ S.S.D. WAKHD/MM*, KM6BI*, KL-
7CTJ*,
4DO: K/W*, KH6*, DJ2YL*, DL5EA*, G-
3GHE*, KHLZL*, HKJMK*, HK3QV*, IU4*,
HS1B*, KFCXG*, KXC6S*, KLTCF*, AP7Y*,
4WZAA*, KQAGV*, VQRI*, H8BNU*, N-
4444*, QG6S*, ST4J*, ST4J*, VR2Q*,
VS6GS*, KW3AL*, YN3LVB*, YVIDP*, 5M3EP*,
T12ES, T12VM, VU2RN, VU2BK, 457Y, 5M2EV,
9M2ZF, 9M2QD, ZC4F*,
BE8S-10E: W4YW/KH6, KH6QD,
L06S: VK9RO, KA2BV, KZ6H, KH6BLX,
ZJ2TA, VR2DF, KR6IK, VU2AC*,
GI4RI.

28 Mc. C.W.
2QL: Ws*, VEs*, JA5*, RA0AAA*, VS5GS*,
CX2BT, ZC4IP, KR6QW, ON4HN, UA1a.

28 Me Phos

5GM: G3DO*, G3AAE, G3FKM*, G3BGL*, G3LTZ*, G2XK*, G5VT*, DL7AD*, FK8AU*, JA1CON*, JA2AEY*, JA3CE*, JA4DZ*, JA-8CQ*, VU2ANI, VU2PJ*, VS5GS*, VK9RO*

VR2DO®, KR6
WILLER®, WEL

L3085: KL7CUR, WTGPE, VK9RO.

QSLs RECEIVED
2AMB: CNEBK, EAUD, HESLAC.
2AQL: I5GN, VF6WD.
2OW: VES8C (Band Is.), LX2GH, JZ0HA
VR5AC.
2QL: BV1US, VS9OM, TF6GI, 5A5TO, 3A2AE
ZS6IF/7, ZS6IF/8, VSSAHM, FB8YY.
2ZR: EA5FI, LU2HBM, ZC4GB, YU2UQ, YU
ZR, YO3AR.

Frank Seeler is a new name in the DX ranks of the DX page. He has been a s.w.l. for 31 years. He has never carried a great deal about DX, has spent most of his time in the 7 Mc. band listening to the doings on portable and mobile transmissions. However, Frank decided to see what he could do in the DX field this month and sent in a long list of signs received at his home in East Preston. Will be pleased to hear from you often.

VK2QL seems to have the happy knack of snagging those elusive ones. This month Frank got the final U.S. State to complete his 21 Mc. W.A.S. and so make him W.A.S. on three bands. All working was done with less than 50 watts.

VK2OW now has 137 countries confirmed. He was hoping the B.E.R.U. Contest would make additions to this number but had no luck. Gordon said there didn't seem to be many Empire stations on, or at least he could not hear them at Temora.

From 2A2Q: "Had a very interesting visitor to Canberra A.B.C. studios last week. The chief engineer of the Nepal Broadcasting Corp. He was very surprised to know that I had heard of Nepal and knew something about it, so I gave Amateur Radio a plug and told him how I had come by the information via 9N1GW." (Perhaps more Amateurs and less s.w. broadcasting is the answer to the problem of propaganda programmes.)

L3039 has sent in a very impressive list of stations heard on the 3.5 Mc. band which includes 25 from Europe, mostly early morning around 0515-0600z. It's a bit early in the morning, but perhaps some of the 80 mx gang wouldn't mind giving it a try before the cold

weather sets in.

VK4DO is now W.A.Z. on both phone and c.w. L3065 has 60/105 countries heard, plus 48 of the U.S. States. SAOM found conditions were improving as his 14 Mc. phone list comprises over 30 DX contacts in 20 countries. 5RK has added two new countries to his DXCC list. Thanks Ray, for your letter on the doings from VK5 land.

My thanks also go to 2AMB, 5RX, 5GM, BERS-195 and BERS-1902 for information supplied. 73. VK2ZR.

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

Editor "A.R.," Dear Sir,
 7 Mc. c.w. is still capable of providing plenty of fun for the DX man and this band is worthy of more attention in view of its precarious position as outlined in the report on the Geneva 1959 I.T.U. Conference and also the remarks of overseas contestants in the last VK-ZL Contest.

The following is a list of stations worked during February: ZS6APF, ZS6AGH, ZS2AJ, ZS2AB, ZS5V, ZS8JW, VQ4GQ, 4X4WF, VQ2, G3LET, G3FPQ, PA0VO, UA0KOA, UR8KIU, VP5ME, 14 JAs and 197 Ws which included 46 on the Saturday night and 49 on the Sunday night of the A.R.R.L. Contest. A number of W2 and W3 were contacted at 2100 GMT via the long path. On 7/3/80 W2KQT was worked at 0700 S.A.T. with ST report.

Yes, OM, forty metres still packs a wallop and more recruits are wanted.

A "PINK PAGE" SECTION FOR THE

Editor "A.R.," Dear Sir,

This list, in addition to Call Sign and Name, could have the first or Christian name, followed by a short statement of hobbies other than Amateur Radio. In addition to providing this valuable personal information permitting us to see at a glance some kindred spirit with hobby inclination of our own, the QSO could start immediately on friendly "first-name" terms.

Coupled with this should go the complete deletion of titles, etc., in the "White Page" section of the Call Signs. Amateur Radio is one of the most friendly of hobbies and could be well rid of the tags "Doctor", "Reverend", etc. Without fear of effective contradiction, I would state that no more of those listed as "Doctor" have any legal or moral right to the title, they being no more than Medical Ecclerics, who have presumptuously assumed this clamour tag.

As regards the "Reverend" gentlemen, any QSO with these does not proceed far before the professional tone of voice betrays the vocation of the call sign holder.

When I attended Newcastle High School between 1909 and 1913, I was known as "Professor" Joe Reed owing to my habit of always having some scientific tome under my arm and ability to expound on the marvels of Halley's Comet then visible in 1910. In addition,

Should the Medical Bachelors and Reverend gentlemen fight for the retention of phony and sanctimonious tags in the old Sigsbee and other books, in such circumstances, I desire to be listed in future not forgetting the brackets and inverted commas. Hannam, VK2AXH, does not feel out in the cold, he, as a member of the 1911 Mawson Antarctic expedition, suggests that a bracketed letter be used in the Antarctic that would fill the bill nicely. Incidentally, on the having seen Wal. swing about in his bamba on thick at Terral where he selects nice and 50 footers for masts, you would be excused in overlooking the full stops between the

—J. G. Reed, VK2JL

[This letter is published for its general interest and the Publications Committee welcomes comment regarding the inclusion of special sections in the Call Book.—Editor.]

Editor "A B." Dear Sir,

Since 1955 I have handled quite a considerable number of s.w.l. QSL cards for numerous VK0 stations plus VR1B.

(Continued from Page 22)

who are registered listeners were home first on two occasions. Barry's 1 mx oscillator was used for the fox and worked very well. Two for both tx in the hunt was supplied from relaxation oscillators mounted on a simple lug strip. Power for the 1 mx gear was only forthcoming at 2 o'clock Saturday afternoon when I finished my transistorised power supply which worked first try. I might add that it was the first time anything like that has happened at this QTH.—SZAW.

TASMANIA

Of interest is that t.v. Channel 2 and 6 stations have started testing from Mt. Wellington.

VICTORIA GENERAL NEWS

John ZFO has departed for Morwell where it is felt that being in a t.v. fringe area (temp. operations will be limited; wish you the best of luck. John. ZJZE moved QTH to south of the Yarra. Less QRM for northern suburbs. ZDZK now works 6 and 2 mx. Ken is rather tied up at the moment. Hope everything works out OK. Ken. ZGZD recovered from his recent cold. ZJZE is now running a new 600watt cheer up, Bert. So long as you don't have sit on them! Bert is now running a new rig and sounds quite nice. Certain gentlemen could not recognise the modulation when the

Now perhaps to ensure that a s.w.l. station actually heard the DX station, and not the other side of the conversation, it would be a good idea to give the report that the DX station gave the other. I wonder how many s.w.l. reports are confirmed by saying they heard the DX station and actually they heard the other end of the conversation?

One pleasing thought about these s.w.l. cards I just received, is the fact that none of them are VK cards. They mainly are UA, OK, HA, and YO cards. I must congratulate the VK boys on the layout of their s.w.l. cards and especially Eric Trebilcock's method of report. As a matter of fact, if you have forgotten what you said in your QSO with the other station,

—Bill Storer, VKEG.

(Continued from Page 22)

TASMANIA
7LZ has continued his VK3 DX working and

Melbourne, and 32AT at Sale. Conditions are more similar to 144, 35c, but with damper

Of interest is that t.v. Channel 2 and 6 stations have started testing from Mt. Wellington.

VICTORIA GENERAL NEWS

John 3ZFO has departed for Morwell where it is felt that being in a t.v. fringe area (temp. operations will be limited: wish you the best)

the Yarra. Less QRM for northern suburbs

3ZDK now works 6 and 2 mx. Ken is rather tied up at the moment. Hope everything works out OK. Ken. 3ZGD recovered from his recent illness and is currently battling with boikots. cheer up, Bert. So long as you don't have to sit on them! Bert is now running a new rig and sounds quite nice. Certain gentlemen could not recognise the modulation when the

3ZCO is organising a 5 el. yagi; how about

3ZEO has just entered into a contract for a new 6146; appears the old one will now mount on the shack wall along with other exhibits

QUEENSLAND
Dave 4ZAX is on sideband of double variety
at moment. Bill 4WD is having a shack-cum-

mike cable, Bill, otherwise Dot won't be able

SOUTH AUSTRALIA

who was active on 2 mix, went to G land for three years where he took out a call and

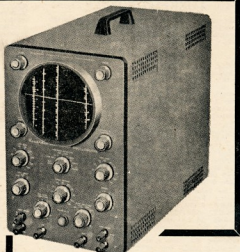
used single sideband to work the boys back here. Hope to see you around Phil. Congrats. to George 5ZGA who now has his Morse. We also understand that Neil 5ZDH and Barry 5ZBZ are getting in a lot of practice.—5ZAW.

ELECTRONIC EQUIPMENT COSTS CUT IN HALF

with

HEATHKITS

THE WORLD'S MOST POPULAR
DO-IT-YOURSELF KITS



The Heathkit Model O-12, 5 inch Oscilloscope is an example of the top quality test instruments available at half the price you would expect to pay. This feature-packed kit sells complete for only £65/10/0 plus S.T.

HEATHKITS GIVE YOU TWICE AS MUCH EQUIPMENT FOR EVERY POUND INVESTED

Stretch your test equipment budget by using HEATH-KIT instruments in your laboratory, home workshop, or on your production line. Get **high quality** equipment without paying the usual premium price. Heath-kits are simple to build—you need no previous experience. Comprehensive step-by-step instructions ensure minimum construction time. You'll get more

equipment for the same investment and be able to fill any requirement by choosing from more than 100 different electronic kits by Heath. These are the most popular do-it-yourself kits in the world, so why not investigate their possibilities now. Send today for the free Heathkit catalogue.



The Heathkit Model S-3 Electronic Switch Kit allows oscilloscope observation of two signals simultaneously, such as input and output of amplifier. A truly high quality kit priced at only £24/12/6 plus S.T.



The Heathkit Model FM-3A Hi-Fi F.M. Tuner Kit enables you to enjoy F.M. radio entertainment at its best. I.F. and radio transformers and front-end tuning unit are pre-aligned so kit is ready to use when completed. £27/11/0 plus S.T.



★
**YOU BUY WITH
CONFIDENCE
WHEN YOU BUY
HEATHKITS**
★

The Heathkit Model V-7A is the world's largest-selling V.T.V.M. Precision 1% resistors are used in the voltage divider circuit for high accuracy and an etched circuit board simplifies assembly and cuts construction time in half. Only £27/10/0 plus S.T.



WARBURTON FRANKI

VIC.: 359 LONSDALE ST., MELBOURNE
Phone: 67-8351

N.S.W.: 307 KENT STREET, SYDNEY
Phone: BX 1111

QLD.: 233 ELIZABETH ST., BRISBANE
Phone: 31-2081

POST THIS COUPON for

FREE
HEATHKIT CATALOGUE

Describes over 100 easy to build
high quality electronic kits.

To: WARBURTON FRANKI

Please send latest Free Heathkit Catalogue.

NAME.....

ADDRESS.....

worked well into Melbourne with his 144 Mc. portable gear.

The Club spent an interesting evening recently at Dick Highway's shack and members obtained a preview of t.v. transmitting equipment that Dick is building including a flying spot scanner, also various other pieces of Ham gear. During the evening, contacts on 144 and 238 Mc. were obtained and several prospective Hams had their first opportunity to say a few words over the air.

On a recent Tuesday evening Club members 3ABT, 3ALP, 3AMC and 3IC took part with other South Western Zone stations in their first W.I.C.E.N. hook-up. All stations were heard at good strength and traffic was handled without difficulty.

At the March meeting members brought along their v.h.f. gear for display and discussion. Equipment displayed included several crystal locked 144 Mc. converters, 258 Mc. equipment and a coaxial tuning unit for 576 Mc.

Congratulations were extended during the meeting to Harry Michael and Rex Ford, both of whom have just received word that they had passed the exam. for their limited licence. Congratulations also went to Eric Coxall, the chief instructor of the study group for his coaching that enabled these chaps to get their tickets.

The Club plans to hold further tx hunts on 80 and 2 mX shortly and suggests that members put some work into getting gear ready for the occasion, now. The Club meets weekly on Wednesday evenings at 8 p.m. The club rooms are in Gheringhap Street at the rear of the Congregational Church. All interested in radio are welcome.

QUEENSLAND

BRISBANE AND DISTRICT

Well, we are now into the new financial year and it is time again to please send them in quickly to save unnecessary book-keeping.

Officers will be elected at this month's Council meeting and there will be some old members leaving Council as well as new ones taking Council jobs. John AFP has decided to have a rest from Council after having been in different positions in the study group for the last eleven years. Bert 4AO has decided to give up the job of station manager after doing so well over the last few years. When Bert took on the job a few years ago, he was handed a couple of GOR tx's and he decided to make them into a really first-class Amateur station. Anyone who has seen 4W1 will know the wonders he has done with those two rigs. Now they can be modulated together or individually and make a wonderful station for any station manager to take over. It's going to be hard to find someone who will do the job as efficiently as Bert has done for so many years.

There is a very important matter which must be cleared up one way or another, and the sooner the better. It appears that some of our members on the extreme fringe are causing t.v. and have to stay off the air during tx. hours. Now, if you have any harmonics from your 3.5, 7 or 21 Mc. transmissions that fall on 63 Mc., you will most

OBITUARY

H. W. (BERT) MADDICK, EX-VK3EF

March 10, 1960, saw the passing of an old-timer in Bert Maddick (aged 69), who obtained his licence in 1912 and was one of the first in Australia to own and use a three-electrode valve. He was one of the first six operators to join the Navy for service on merchant ships during World War I.

From 1919 to 1936, under the call of the VK3EF, he was very active, especially on Sundays on the broadcast band playing recorded music. He received some press comments when he put a cocktail before the microphone and cocky disgraced VK3EF by indulging in a lot of bad language. It will be news to most young Hams to know that the "Listener In" published the Sunday programmes in these days of a few Hams including VK3EF and VK3BY.

Bert home-made gear had the finish and appearance of commercial equipment, very different to most Ham gear of these days. About 1954 he sold his 50 watt transmitter to some people in Horsham who had obtained a "B" class commercial licence. Later this licence was sold to most young Hams (a 100 watt transmitter) moved to Lubeck and became 3LK.

During 1955 Bert received mention in the press for having received 2LO London on their broadcast frequency. He came first in the 1955 Trans-Pacific Tests conducted by the Wireless Institute of Australia. This consisted of sending and receiving a message of 500 words across the Pacific. For this he received a nice silver cup.

In later years Bert was employed in the Telephone Branch of the P.M.G., from which he retired some two years ago. We all regret the passing of such an old gang and offer our deepest sympathy to his family.

DON PITT, VK3ZBG

In tragic circumstances VK3ZBG, Donald Malcolm Pitt, 26, of Moorak, near Mount Gambier, was accidentally killed on February 28.

Don, only child of Mr. and Mrs. C. J. Pitt, had his heart set on radio from a very early age and when he was only nine years of age he built his first radio.

When a vacancy occurred on the technical staff of Station 5SE he jumped at the opportunity and was there from 1st April, 1955, until his death.

Although he was not heard on the air, Don showed a keen interest in Amateur Radio and regularly attended the meetings of the Mount Gambier group.

He was one who could turn his hand to almost anything, was remarkably tall and he was always eager to help with engineering and mechanical work, having a fully equipped workshop at his home.

His untimely death came as a great shock and he will be sadly missed by South East Amateurs.

We join with many others in offering our deepest sympathy to his parents.

certainly cause t.v. if you are in a low signal area. This will be to Channel 2 which covers from 55 to 75 Mc.

Here the interpretation of the Act is very important because there is some doubt as to whether the Act should be interpreted to mean that harmonics should be 40 db down on "your fundamental" or "on the received t.v. signal." Unless there is some clause in the t.v. section of the Act which clearly says so, the interpretation, which has been accepted before t.v. reared its ugly head, was that your harmonics should be at least 40 db down on "your fundamental."

Another important matter is, since t.v. licences must be paid on all t.v. receivers regardless of where they are, what is the service area of the Brisbane tv. stations constitute? If a person with a t.v. rx in Townsville has to pay his £5 licence to receive irregular openings of Channel 2, he must be protected from t.v. This is the most ridiculous situation I've ever heard of.

If you are causing t.v. to Channels 7 or 9 you have just "had it" because they have no harmonic relation to the Amateur bands between 3.5 and 30 Mc. and t.v. can only filter spurious signals. The fact that the Act which allows you to have spurious signals, in fact it states quite clearly that your transmissions must be free from them. So if you are causing t.v. you will have to do something about re-building and completely shielding your rig or stay off the air during t.v. hours. The open, unshielded rigs or large unshielded racks are the main offenders and the trend is towards table-top rigs which can be completely enclosed with a low pass filter tacked on the output between rig and antenna.

Council will see if F.E. can get us a clear statement on harmonics. The t.v. signals are below 20 microvolts, the "40 db down" clause would mean that the interfering signal would have to be below the level which could be read on an instrument.

It is impossible for our T.V. Committee to go out to towns in the extreme fringe, but I know they will help you by mail. Tibby 4HR is chairman and if you send your letters to his home QTH I know the Committee will do its best with suggestions which may help. Council authorises the purchase of six copies of Phil Rand's latest book on t.v. which, when received, will be kept in the library and will be loaned out to members having trouble with the "one-eyed monster." When we get these books it will be announced in "QTC".

Well, I know you will excuse me for not giving any personal pass because this matter is very important to us. 73 from 4PR.

MARYBOROUGH

After silence for five years, 4GH reappeared on 7 Mc. on phone and c.w. Gordon is modulating a single 807. 4DJ is now set up on 6 mX and looking for DX, with an 819 in the final; has a 3 el. beam. Both 4DJ and 4GH are building super-regen. receivers for Tx Hums on W.I.A. Branch outings. 4BG demolished the old beam and used the beam and new one is using a 14 Mc. folded dipole. 4BL is now the proud owner of a SX101 receiver.

Wireless Institute of Australia

Victorian Division

A.O.C.P. CLASS

commences

THURSDAY, 25th April, '60

Theory is held on Monday evenings, and Morse and Regulations on Thursday evenings from 8 to 10 p.m.

Persons desirous of being enrolled should communicate with—

Secretary W.I.A., Victorian Division, P.O. Box 36, East Melbourne (Phone: JA 3535, 10 a.m. to 4 p.m.), or the Class Manager on either of the above evenings.

ALUMINIUM TUBING

IDEAL FOR BEAM AERIALS & T.V.

★ LIGHT ★ STRONG ★ NON-CORROSIVE

STOCKS NOW AVAILABLE FOR IMMEDIATE DELIVERY

ALL DIAMETERS 1/4" TO 3"

Price List on Request

STOCKISTS OF SHEETS—ALL SIZES AND GAUGES

GUNTERSEIL ALLEN METALS PTY. LTD.

88-92 YARRA BANK RD.,
STH. MELBOURNE, VIC.

Phone: 69-2121 (10 lines)
Telegrams: "Metals," Melb.



HANSON ROAD,
WINGFIELD, S.A.

Phone: 4-3362 (4 lines)
Telegrams: "Metals," Adel.

A meeting of the Wide Bay and Burnett Branch of the W.I.A. was held at a Picnic Spot near Gympie on 28th February to enable XVYLs and harmonics to participate. 17 members were present, including Max 4HD and Stan 4SA. 4HD, 4FU and 4ZBS were admitted as full members, making a total branch membership of 37.

Mobile transmitters were operated en route by 4BJ, 4HD, 4SW and 4XR. Stan 4SA was appointed as delegate to the Div. Council. After the meeting a Tx Hunt was arranged by 4XR who was eventuating run to earth on the other side of the Mary River by Max 4HD who won a split-stator tx condenser donated by 4RD and 4B. A social dinner and a Tx hunt was held for the ladies, the winner being Mrs. Gwillim.

A.O.C.P. classes have commenced at Bundaberg, Gympie and Maryborough.

TOWNSVILLE

The monthly meeting of the T.A.R.C. was held at the residence of 4BX on 25th Feb. Owing to the absence of the President (4PS) the chair was taken by 4DD. After disposing of the minutes, the chairman welcomed the visitors—4H, 4ZBV and 4ZCK—from Brisbane. First item of general business was the notice of motion by 4RW which appeared in Feb. notes. On moving the motion, 4RW was requested to the chair to curtail his address as it had been referred to at previous meeting and that the members had had a month to think it over. After a short address, 4RW moved that the A.R.C. become affiliated with the W.I.A., which was seconded by 4ZBE.

After a lengthy, and at times heated, discussion, the motion was put. The motion of affiliation with the W.I.A. was decided—10 votes to 4, or by a 2-1 majority of W.I.A. members. So here the matter rests until some time in the future when it may come up again. Graham 4BX gave notice of motion that the word "social" be incorporated and become the Townsville Amateur Radio Social Club, at the March meeting.

It was pleasing to see quite a number hand in their subscriptions to the W.I.A. to the Secretary 4WH. The Club, I hope, will become 100 per cent members of the W.I.A. even though not affiliated.

Bill 4ZBE asked that a meeting night be devoted to talks on v.h.f. and it was decided that one hour be set aside for this purpose. John 4DD, in his technical talk, spoke on the method of obtaining bias voltage at very low cost. Frank 4FP spoke on the classes and mentioned attending a convention held between 4 and 10 and that good progress was maintained. Owing to the wet season and flooding, Claude 4UX and his boys did not arrive from Ayr, but promised to make the next meeting, weather permitting.

Owing to my outside commitments, have not presented the band of the late and cannot give—10 resume of what the boys are doing. Arthur 4FE passed along the word that there are four stations on 50 Mc. operating from Darwin. The local boys had a field day with the KH6s on the Saturday after the bomb exploded in the "Sahara," signals being SR plus on 40 Mc.

John 2JU's report in March "A.R." on the I.T.U. conference was very good and merits reading many times and can open up a wealth of interesting discussion. Now, we must now prepare for the next I.T.U. Conference and not leave it to the last few months as he mentioned in the article. This should make any who did not contribute well aware called filthy lucre hang their heads in shame, as after years of enjoyment in Amateur Radio they may find their hands to be empty. United we stand, divided we lose our operating privileges.

SOUTH AUSTRALIA

The monthly general meeting of the Division with the theme of V.H.F. was held at the clubrooms to a capacity audience, even though it also included an annual general meeting for good measure. Anybody who belongs to any form of organisation is well aware that annual general meetings are to be avoided if possible, unless of course one has a plentiful supply of sheep, cattle or the like. It is always surprising just how many members come along to the VK5 general meetings even though well aware that it will also include an annual general meeting as well.

The secret lies in making the meeting as much like a civil war as possible, without letting the combatants into the secret. The audience is usually divided into two sections, the minority who have come along well aware of what they have let themselves in for, and the majority who have come along blissfully

unaware of the trap that they had fallen for. The minority sink into an unconscious condition very quickly, but the majority take a little longer, possibly from a sense of embarrassment. At the moment that the majority are settled down in the arms of Morpheus, up jumps what is commonly called an agitator and says a few well-chosen words, and before you can say single syllable of some such phrase, the audience is wide awake and arguing the point with whoever is prepared to listen, and some time therefore elapses before they sink back to sleep. This can never fail as the members leave the meeting in a state of exhilaration, and all say what a beaut meeting it was. The only single syllable of a general meeting only come once a year!

Working along these lines, the meeting was a huge success, the more so when you realise that it voted unanimously for an increase in subscriptions, an increase in the honorarium for the Secretary and Treasurer, and I feel sure even for an increase in my salary as sub-editor, if it had been put to them, which it was not, due probably to bias on the part of Council. The highlight of the meeting was when Ted 4JE stood up and made an impassioned plea for more use of the air, and so much so that it looked that we would have to shoot him to stop him, only to be torpedoed by Luke 4LL, who said that the first time that a certain local decided to use mx a trial he was blasted off the said band by Ted calling CQ on phone! and in the c.w. band. The area that Ted was overcome with mortification. Luke was overcome with remorse, the members were overcome with mirth, and the chairman, Brian 4CA, was overcome with frustration.

The rest of the night went according to plan without any untoward incident, except when Leith 4LG engaged in a battle with the Elizabeth gang as to whether they should be classed as metropolitan members or not, which was brought to a satisfactory conclusion by Leith giving in gracefully, but only after the dryant had entered the back of the room and given him a decided dirty look. Leith was not worth a "razz" after that and relapsed into a stony silence for the rest of the meeting, well anyway what can be classed as a stony silence for him.

Heard Joe 4BO on 40 mx the other Sunday morning and he seemed in his usual good form. Just in case you never listen in on that band, Joe is a double Grandpappy, with a boy from Joyce and a girl from Joan. Work, Joe; by the way, they tell me that you are being heard loud and clear in the test room of the t.v. set radio workshop over the road. Do they QSL?

Tom 5TL heard on 40 and conducting a QSO under some difficulty. It would appear from what I heard of the contest that the contest was the road from his shack was adjusting his motor car, and after every adjustment he would hear and then come back and then come back for more tuning up. Tom was having some difficulty in judging how long the car would be away, and when he would hear it coming back he would start talking twenty to the dozen, and then fall to the shack floor in sheer exhaustion.

Gordon 4SVI needed some Minties the other Sunday when his rig gave up the ghost in the middle of the W.I.A. session. If my rig or your rig sells out, so what? but when the technical adviser and one of the EWS stations goes out of business right in the middle of the session, then the whole world knows about it. John 4JC came up on the frequency and nobly carried on a contest of discussion, to everybody's satisfaction, especially Gordon's.

Tom 5AQ has been heard consistently down here over the past month, both portable and fixed on 40 mx. Good solid signal on the SWI call-back, too.

Among the visitors at the meeting were: Kevin Sweeney, from Gawler; Robert Daniels, from Magill; Ron 4ZVB, and last but not least, J. Armstrong 4GFP, who called in on his way home from visiting his brother Port Lincoln, who is none other than George 5QA, who sent a personal note by his nephew strenuously objecting to his guest-house being likened in the notes to the guest house presided over by Doc SMD. My humblest apologies, and if I have said anything that I should be sorry, for I am said.

I was a little early for the meeting so decided to have a look in the shop windows to pass the time away. Sharing the windows with me was a double for Phil 4WIL who is in G land at the moment, and when this double spoke to me I realised that it wasn't a double, and also that Phil was not in G land at all. Nice to see you back from your wandering OM.

News from the Upper Murray gang is a little improved this month, although my representa-

tive there has been so busy that he has had only a little time for listening, with his only contact on the air for a week severely messed about with the aforementioned motor car.

Harry 5KW announced recently that he would have to get around to getting on the air again. Everybody is busy trying to decide if this is a threat or a promise, and only time has the answer. Fred 5MA has apparently succeeded in separating himself from the rotary hoe because he has been heard on 50 Mc. at odd times with a couple of local contacts.

Hughie 5BC, according to all reports, is not as active on the air as of yore and the reason given is that the family is so keen on the one-eyed monster that he is not game to go on much in case of family t.v. This excuse might go over with some, but as far as I am concerned I think he is a victim of the monster himself. How could you, Otto? Pat 5LT turned up at the meeting and tells me that he has not yet finally decided which part of the suburbs he will be living. He is still at the local caravan park and therefore has no opportunity of getting on his favourite 14 Mc. Rumour has it that he will finally settle on the foothills for his QTH.

Low Drift Crystals FOR AMATEUR BANDS

ACCURACY 0.02% OF STATED FREQUENCY

3.5 Mc. and 7 Mc.

Unmounted £2 10 0

Mounted £3 0 0

12.5 and 14 Mc. Fundamental Crystals, "Low Drift", Mounted only, £5.

THESE PRICES DO NOT INCLUDE SALES TAX.

Spot Frequency Crystals Prices on Application.

Regrinds £1/10/0

MAXWELL HOWDEN
15 CLAREMONT CRES.,
CANTERBURY, E7,
VICTORIA

Could not but notice in the President's annual report the reference that during the year 1969-70, Claude had been forced to leave the business to give up the Divisional notes, and that you truly had taken up the job again. I am almost certain that Claude had not succeeded in having a monthly sparring match with a one-time VK3 scribe, which is missed by all, but that he felt sure in the reasonable future he would be able to fight with another Divisional scribe, cut me to the quick. Me, the most peaceable, the one who always has a good word to say for everybody sits right through annual meetings and never opens his mouth, the one who is known far and wide as "Oyster Pansy", to think of it. He is a good fellow. However, I did we have a new President this year, Lloyd 50K, although now I come to think of it, he gave me the icy stare at the next two annual meetings."

Claude 5CH is at the moment very busy working the DX on 40 mhz with c.w. The wheel has turned a circle, as it so often does, and Claude is back where he started in Amateur Radio. Good to hear, OM. Incidentally, your grandson may be the best in the State, but mine is the best in the Commonwealth!!

Tom 5TW is fairly quiet these days, but with his family of girls growing up and the fact that he has a good job, I think he is just being a some excuse for him. Stuart 5MS had a good try to cut his foot off recently, but we are glad to report that he is still here. I have heard more than one truth in the rumour that he was looking for an excuse to be home when the DX broke through. Erg 5KU brought the code message to the meeting of the S.E. boys and gave them a few hints on the art of c.w. Did that make Claude get out the key and give it a dusting? He has been working hard, but I don't spend the entire time in idleness as he returned with a 45 ft tower. Look out, here we come. Col 5CJ has not been much of the late but is still enjoying life to the full in his own inevitable fashion. Possibly the fact that the t.v. set next door has disappeared may have something to do with it. I wish that the canary" grin that he is wearing lately.

Heard Max 5QF on 7 Mc. the other afternoon and he was a little out of control. I told him these days, especially on 7 Mc., but back a few years ago his signal was seldom off the air. Tim 5TJ was copied recently in QSO with me. I thought I had caught him with a model one. A little treacher, a little amateur chatter and also quite a lot of talk of subjects I never heard of. I was a little suspicious of the "Yabby catchers as against Duck shooters". I was amazed at Jeff's statement that in six months he and the professional shooter, John 5K, would be going to Kangaroos. I thought I had misunderstood him, but Tim repeated that figure, so I knew it was right. I said that it had a very many names, and to the number of Kangaroos around in the paddocks. Think of the feed they would eat. News leaked out this month that Yabby 5QD would probably be moving from his present QTH in Elizabeth to another part of the same area. Condemnation was expressed by the other members of the club. I was told he was to be East Elizabeth, then North Elizabeth, then West Elizabeth, and finally South Elizabeth. Everybody is waiting with bated breath for the contest, and the guns and the unfortunate area to be chosen are at the ready.

Had Roy 5AC at the meeting and he looks fit and well after his return from the trip abroad. Would have liked to have a longer talk, but naturally he was in a hurry. I was a little surprised when Jack 5OM heard on 40 with an extra good signal. He seemed to be a little doubtful as to whether his signal was too good to put it, but I can assure him that he had nothing to worry about. In fact I and several others that heard his transmission commented on the clarity of his signal. He was not very active on the air, although he is said to be decidedly active with 50 cycles instead of 7 Mc. It can't be for fear, but I don't know. Not a word from George 5EC but I think his little tale told me that his second in command, Jim 5WJ, is about to take unto himself the name of "The Little chap in the immortal phrase, "DX before dishes."

Working along the same lines I want to take the opportunity of informing everybody of the fact that Warrville District is catching true as first. First it was John 5JC and now it is Bob 5PU who is the father of a bonny brood of true Warrville Districters. I tell you, Bob, and I take off my hat to the XVI, and but for the fact that I might become infected would like nothing more than to become the "Little chap in the immortal phrase, "DX before dishes."

Joe 5JB hopped up at the 5W1 call-back the other Sunday morning. He has not been heard lately, and I was beginning to think that he had given the game away. That makes two of them up at Leigh Creek; I might get my winter hat out of my cupboard yet.

Layton, the son of Lance 5XL, is a cadet at the Weapons Research Establishment at Salisbury and is showing a keen interest in the game of golf. I was glad to hear of him so that he is thinking of having a go at the ticket in the future. Another promising recruit to the game of golf is Doug 5ZB who is a veterinary science scholarship and is at the University to continue his studies. In residence at Lincoln College, I would not be surprised to see him at the meeting or two, and the same goes for Layton.

Anybody who was at the last general meeting could not have failed to notice how unanimous was the vote to raise the subscriptions for this year. Bearing that in mind, I was somewhat surprised to bump into one or two of the members who were not at the meeting, and to note that they felt that the rise was not altogether justified. In talking the matter over with them, I realised that all of them did not raise their expenses have risen lately, and also that they did not have the benefit of the thorough explanation given by the Treasurer 5CJL at the meeting. I feel sure that I could find out the exact matter of the subscriptions had been included in our journal which came out just after the meeting, together with the explanation of the Treasurer, and any other points which made the members present at the meeting so unanimous. The strongest point of all is that we were paying thirty bob years ago when our wages were less than half of what they are today, and a rise of ten bob therefore does not seem so big from that angle. Don't get me wrong, nobody was actually grizzling, but a number just did not have a full grasp of the reasons.

In closing the notes this month, I cannot miss the chance of saying that one of the greatest "Gimmicks" in commercial radio, to find out the main mistake is to the end, to make an obvious mistake, the copy or purposely leave something out, and then wait for the telephone to ring and the letters to arrive. Recently I slipped up in the local paper which runs our W.I.A. weekly column (I heard you, it's weekly, not weekly!) and to say that the reaction was good is to put it mildly. To make a mistake is to put it mildly. "waking the old fellow up," or to find out what had happened to "the grey haired old son-of-a-bitch" to all who dream of finding me the address of the old folks' home, and finally to all who expressed concern as to my physical health, my alleged senile decay, and other such things. I am glad to see their minds. I can only say sweetly, with a smile that would do justice to a ravenous wolf, thank you for your concern. It is nice to know that you think of me now and again—GERCHA.

TASMANIA

My apologies to Col 7LZ for treating his 286 megacycle distance record to Barney 7ZM in the March issue. Anyway, Col, a mighty fine effort, and I hope Barney can one day justly claim the title of "Long Distance King". I know of six portable stations out on the National Field Day Contest, and altogether, that Contest was well patronised this year and was certainly a considerable improvement on last year's. I was very glad to hear it was also pleasing to find Tom 7FM and Max 7MX giving scores on c.w.

Perkins is moving to VK4 and we all wish him the best for his retirement in a warmer climate. We hope to hear you on there, Peter.

Tom 7WJ will be completing his term as broadcast officer for our Sunday morning sessions from the middle of March. The Institute has had a good year, and I am voting so much time so regularly to our service and we all thank you most warmly Tom for your efforts on our behalf. It now behoves you, OM, to build yourself a rig and become airborne.

Ken 7KA is quietly confident that he has no rival in c.s.t. from the fact that his own rig is in the same room as the tx shows a rise of 7KA in the wrong spots, and that is the basis of his quiet confidence.

Jim 7JL had a good time at the Amateur activity in the South since about the end of February. He can be heard most nights pounding away.

The South were most fortunate at our March meeting to have a peep at the test equipment installed at the place of business of Ted 7EZ for the purpose of testing tv. rx's.

The monoscope is really a fabulous contrivance, and if we did not know before, we came away with the realisation that the alignment of a homebrew tv. rx is far beyond the hit-and-miss methods we would have to employ without the use of such contrivances.

North Dakota is a stumbling block to several of us for W.A.S. I was astounded to hear a station from that State on 80 metres coming through on 57 on the night of 3rd March. When I was there, there were a number of Ws coming through at that strength the same night.

Four of our chaps from the South deserve our gratitude for opening the radio air over two mornings at the Hobart Regatta in early February.

DX has been patchy recently, but I did hear ORX on 21 Mc. on 31st Feb. and Doug 7DW reports that the 2Z's and a 2E8 were coming through on 80 on the same band on 28th Feb. I also heard on several occasions both morning and night 6G7XK on 14 Mc.

The V.h.f. Contest for VK7 stations was duly held in February. No new stations were entered on to those bands for the Contest, but I did hear a whisper that an additional station will be ready by the contest time next year.

It was good to hear Den 7DK back on the air, this time from his new QTH at Potina. He has a new 60w. rig working and hopes to be able to equalise his power. I did hear that Doug 7AZ recently decided to shorten a couple of fingers on his left hand, using a circular saw to do so. Doug hopes to be active again later this year.

HAMADS

1/- per line, minimum 3/-.

Advertisements under this heading will only be accepted from Institute Members who desire to secure an equal position in their own personal property. Copy must be received by 8th of the month, and remittance must accompany all advertisements. Calculation of cost is based on an average of six words a line. Dealers' advertisements not accepted in this column.

FOR SALE: Cent. Electronics 10B s.s.b. exciter, with coils for 5 bands, VOX, Anti-Trip Unit and Handbook. Condition as new. J. K. Herd, Shelbourne Court, Mornington, Vic.

FOR SALE: One new Glosco Amateur Band Front-End Receiver Kit including coil unit, dial assembly and gang condenser. £20. T. Rodda, Box 254, Warracknabeal, Vic.

FOR SALE: Suitcase Transcv. Type A Mk. III, 3-9 Mc., 110-240v. or vibrator, key, phones, spares, suit mobile. New, £10. BIL 4140 (Vic.).

SELL: Basic kit for W2EWL "Cheap and Easy" s.s.b. T1, T2, T3, the three sets 1/10; B & W Audio Phono Network 1/10; B. Mc. Crystal 1/10; coils and sundry items supplied by W2EWL 1/10/10. Also selling many parts, meters, valves—no junk. Send for list. Roth Jones, 131 Queen Street, Melbourne, Vic.

SELL: No. 122 £19, Eng. 22 £10, MN28 £18, FS6 £14, 1154 50/-, AT5 7/10/0, BC459 4/10/0, No. 11 5/5/0, BC312N £3/10/0, No. 19 from 3/5, 128 7/10/0, Class C V.W. 12/10/0. R. Hallyburton, Stonyford, Vic.

SELL: Professionally built all-band 150 watt table-top phone/c.w. rig: Glosco, 6146, 813 pi-output, completely t.v.i. proofed. Two stage speech compression amplifier precedes 807 AB2 modulators. This rig has been an outstanding performer. Mr. Eccleston, 146a Cotham Rd. Kew, Melbourne. (WY 3777).

WANTED: AR8 and 1155 Handbooks. A. Swinton, Avoca Beach, N.S.W.

TELEVISION AND BROADCAST TRANSMISSION



Broadcast transmitters radiating kilowatts of radio-frequency power are today commonplace in cities and towns throughout the country. Many of these transmitters employ the 5762 power triode as the final power amplifier, as do their counterparts in countries as far apart as the U.S.A. and India.

The 5762 is of coaxial design, and as a result it has good high frequency performance, delivering $2\frac{1}{2}$ kilowatts at frequencies higher than 200 Mc and more than 4 kilowatts in broadcast service.

In Australia, A.W.V. produce the **Super Radiotron** 5762 at their Rydalmere, New South Wales, factory where the combined skills of high-vacuum technology, glassworking, physical metallurgy and the like are available for the successful manufacture of a tube of this kind.



AMALGAMATED
WIRELESS
VALVE COMPANY
PTY. LTD.

SYDNEY

MELBOURNE

BRISBANE



GOOD NEWS FOR AMATEURS!

Relaxation of Import Restrictions
will provide early availability of
the famous . . .



EDDYSTONE RECEIVERS

MODELS 888A and 680X

● EXCLUSIVE FEATURES

These Eddystone Receivers are designed especially for the Amateur Bands—high grade instruments embodying advanced techniques and the finest workmanship. The 888A gives you A.M., C.W. and S.S.B. with all of these special features: Built in Crystal Calibrator, Audio Filter, Monitoring facilities, Aerial Trimming Control, Noise Limiter, and operation from Vibrator Power Unit if necessary.

EDDYSTONE represents British Electronic Engineering at its best!



● PLACE ORDERS NOW!

An advance order will ensure delivery from the first consignment to arrive, some of which is already sold, as the demand will still exceed supply for some time.

FULL TECHNICAL DESCRIPTION AVAILABLE UPON REQUEST

Sole Australian Factory Representatives:

Cable: "Cunnig"

R. H. CUNNINGHAM PTY. LTD.

VIC.: 8 BROMHAM PLACE, RICHMOND, 42-1614

N.S.W.: 16 ANGAS ST., MEADOWBANK, 80-0316

S.A.: 14 STAMFORD COURT, ADELAIDE, 51-6392

Q'LD.: 43 BOWEN STREET, BRISBANE, 2-3755

W.A.: 10 MELVILLE PDE., STH. PERTH, 67-3836